

Field Book
of
Willis L. Jepson.

If lost finder please return
to Department of Botany,
University of California,
Berkeley, California and
receive reward.

Yosemite Valley, July 10, '11.
4860 ft.

- No. 4390. *Juncus tenuis* Willd.
Det. F.V.C.
valley floor. Same as 4392.

- No. 4391. Grass. *Deschampsia*
elongata
valley floor.

- No. 4392. *Juncus tenuis* Willd.
Valley floor.

- No. 4393. Sedge. Det. K.K.M.
Just below Nevada Fall.
~~*Sagittaria*~~
Carex ~~*multicaulis*~~ *Bailey*.

- No. 4394. *Heuchera rubescens*
nevadensis
Torr. Nevada Fall. Var. ~~*fragilis*~~

No. 4395. Sedge. See p. 53.
Little Yosemite.

Carex yosemitiana Bailey.
Det. K.K.M.

No. 4396. *Carex exserta* Mackenz.
Det. K.K.M.

On glaciated granite areas
in granite sand.

Upper Little Yosemite.

Carex filifolia Nutt. var. *erostata*
Carex exserta Mackenzie. Det. K.K.M. Kücken.

Little Yosemite to Lake

6300 ft

- No. 4397. Grass *Coa scabrella*
upper Little Yosemite
- No. 4398. *Lupinus grayi* Wats.
Stems of the season erect
from a short but thick woody
branches of the caudex. Fls.
azure blue, a yellow spot in
center of banner ^{from}. Keel ciliate
above. - Little Yosemite.
- No. 4399. *Juncea parryi* Engelm.
Thin soil drift on glaciated
granite.
- No. 4400 Grass *Trisetum spicatum* (L.)
Rich.
with preced.
- Jeffrey Pine, Little Yos. to Lake Merced
abundant about Lake Merced, the
only type of *P. ponderosa* noticed.

Merced.. July 11, 1911.

- No. 4401. *Arenaria capillaris* (Wats.) Jones
Stamens 10. Styles 3. Petals
white, obtuse, elliptic-obovate.
upper Little Yosemite.
- No. 4402. *Eriogonum spiculatum*
var. *spiculatum*
Segments more or less erect
at tip, pink midvein. Stamens 9.
Little Yosemite.
- No. 4403. Sedge. *Carex speciosa* Bailey
upper Little Yosemite.
[*Carex fracta* Mackenz. Det. K. K. M.]
- No. 4404. Sedge *Carex*
Upper Little Yos.
Carex = *C. comosa*
C. campestris DC.
- No. 4405. Sedge
Upper Little Yos.

Lake Merced

Yosemite Park 7200 ft

No. 4406. *Trileleia ixioides* Greene
Brodiaea lugens Greene

Thin soil on glaciated granite
(granite sand). Anthers at
first indigo-blue; those
opposite inner per. segments
on broad emarginate stam-
inodia. Segments with a
dark or brown
a purple stripe on back, the
stripe running down perianth
tube and half as broad.

On upper side segments the
stripe is narrower than on lower
side and disappears half-way
to apex. Sometimes the
anthers are white. Anthers
opposite outer perianth seg-
ments on very short stam-
inodia similar to large ones.
Outer per. segments narrow-

Mariposa Co.

July 12, 1911.

oblong, acutish, the ^{slightly} enlarged
tip with a covering of very short
white hairs; inner per. segments
obovate, obtuse, the short hairy
knob of the outer segments
obscurely repeated at the apex.
These facts regarding the tips
of the segments are scarcely
to be noticed without a lens.

No. 4407. *Plagiobothrys torreyi* Gray.
Lake Merced on granite sand
on granite

No. 4408. *Juncus parryi* Engelm.
on granite

No. 4409. Sedge, on granite
Carex poodii Boott., det. K.K.M.

No. 4410. Grass on granite
Varia bilis Rydb.
(det. B. Crampton, 1972)

Merced Co
 Lake Merced
 Yosemite Park 7200 ft.

No. 4411. Grass.

Granite sand.

Deschampsia danthonioides

- *Populus tremuloides*, 7 ft. 8 in.
 at 4 ft. - Lake Merced Grove.

No. 4412. *Lappula floribundum* Lel.
~~*Schizanthus*~~ var. *jessicae*

bracts white, with a yellow
 gland-like phase on lower
 side. This seems to be exactly
 same as Glacier Pt. plant,
 no. supra. bracts as if
 one and annular.

No. 4413. Grass.

Bromus marginatus Nees
~~*carinatus*~~

No. 4414. *Juncus triformis* Engelm.
 no. 4414a. same as above

Dwarf, on a mossy granite slide.

No. 4415. *Lythia mollis* Gray.

Range 6 to 14.

Dry pine flat.

Merced Co., July 13, 1911.

- Poison Oak. Dr. Andrews
 says the Eastern Poison Ivy
 is (or may be) used as an
 indelible writing fluid. Doubt-
 less our species may be
 similarly used. It is my
 remembrance that I saw
 Poison Oak amongst the rocks
 in Tenaya Cañon near the
 falls. That is probably near
 its upper limits of distri-
 bution in this region.

- *Mitella breweri*, at foot of
 Echo Creek in flat.

- *Hesperochiron californicus* - Lake
 Washburn.

- From Little Yosemite to Lake
 Merced we came over a new
 trail, a cut-off from the Sunrise

Lake Merced

7200 ft.

Trail to the foot of Echo Creek.
It kept us near the rocky
river gorge of the Merced and
we had fine views of the
dome structures of the
upper little Yosemite, the
glaciated flats, with the
granite dikes or cores over
which the stream or
river waters were spread
out as over an apron. Then
is a fine sheet at the
foot of Echo Creek, with
some water wheels on the
slide. By this sheet of
water grew splendid clor
spots or mats of *Pentstemon*
Menziesii (red). ♂

July 13, 1911.

- No. 4416. *Senecio triangularis* Hook.
var. *trigonophyllus* (Greene)
Wet meadow flat. Greenm.
Stems from a short thick rootstock.
- No. 4417. *Galium*
Leaves in 2s. Corolla white
or pale pink. Style included
in tube, 2-cleft.
- No. 4418. *Senecio canus* Hook.
Rootstocks thick + tap-root
like; propagation by slender
underground runners.
- No. 4419. *Gilia pungens* Bth.
Corolla white, convolute, the
uncovered margins of the
lobes reddish-brown. Stamens
at mouth of tube, or very
short (barely evident) filaments
= *Leptodactylon pungens* (Torr.) Jepson

Lake Merced

(Mariposa Co.)

7200 ft.

Style 3-cleft.

No. 4420. [*Hieracium*] *Crepis intermedia*
Pine flats. Rays 11, 12,
bright yellow.

No. 4421. *Polygonum kelloggii* Greene
Pine flats.

No. 4422. *Gilia divaricata* Torr.
Pine flats. = *Navarretia divaricata*
Greene.

No. 4423. *Draba stenoloba* Ledeb.
wet woods.
fls. yellow.

No. 4424. *Epilobium alpinum*
L. fls. white to pale pink.
Stigma very large.
wet woods

July 13, 1911.

LuZula comosa F. Mey.
~~*Juncoides campestris* Ritz. group.~~
Det. F.H.C.

No. 4425. *L. campestris* DC.
Pine woods

No. 4426. Grass. *Poa bolanderi*
Pine woods.

No. 4427. *Menziesia dispersa* Wats.
Pine woods. Fls. yellow.

No. 4428. Sedge. *Carex Hoodii*
Booth. Pine woods, river canyon
bottom of Merced.

var. *longiflorus* Gray. Det. A. L. G.

No. 4429. *Mimulus moschatatus* Dougl.
Corolla lobes broad, entire,
very obtuse. ^{very} A flare of
fine brown lines running
out of ^{dark} throat to middle of
lobes. The folds in throat

McClure Park, Yosemite Park,
of Merced River. 8000-10,000 ft.

make a single fold outside;
the sides of the tube are so
gathered as to ^{make} two extra
folds which are approximate
at their middle or as if
pulled towards each other
over the main side but
not meeting.

var. *parvum* McDar.
No. 4429a *Trifolium monanthum* Gray
Banner sordid brown-white
(or perhaps better dull
white slender-mottled).

No. 4429b. *Pentstemon* ^{Gray} *newberryi*
Corolla crimson. Folds on
throat densely hairy.
Sterile fil. densely hairy
on upper side above

July 14, 1911.

Anthers woolly. Lower lobes
slightly larger than upper.
Lower lobes equal, recurving.
Upper erect. All the lobes
subequal in size, entire.
- This is the same that
formed beauty spots on the
granite at mouth of Echo
Ck. (and so on down to
Yosemite). See p. 52, 64.

Linanthus ciliatus
No. 4429c *Julia* ~~*neglecta*~~ (Greene).
Millions of dwarfs, open pine
forest. Genuine pink cor.
yellow throat, the yellow
extending out to base of
lobes, a crimson spot
on top of the yellow. Cor.
lobes broadly cuneate,

McClure Fork, Merced River,
8,000 to 10,000 ft.

Yosemite Park

truncate, more or less
cross. Stamens exserted.

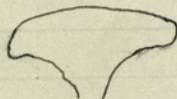
See p. 187. = *Linanthus ciliatus* var. *neglectus* (Greene) Jepson.

No. 4429d *Donna*

Rays 10-14.

No. 4429e *Ribes montigenum* Mill.

Sepals (calyx-lobes) conspicuous.
Fls. reddish-brown. Petals
dull crimson, flabellate
Leaves glandular sticky.

Petal = 

Half way up McClure Fork
Stamens 5, in sinuses of
the 5-lobed disk.

July 14, 1911.

- *Montia triphylla*, with tuber.
3 leaves at base and variable
number white petals.

No. 4429f *Pentstemon menziesii*
var. *gouldii* (Greene) ^{Greene}
Cor. purple-blue. Lower
lobes spreading (not recurved)
outward; Upper lobes erect or
spreading a little backward.
Fold on lower lip very
hairy. - One cor. with 5
regular lobes, hairy fold
running down tube between
each fold; 5 stamens
all alike (no sterile stamen)
Teratology note. *Vogelsang*
Bos.

Vogelsang Pass

10,600 ft.

- No. 4429g. *Aster-Enigeron compositus*
var. *glabratus* Maccom.
Vogelsang Pass
No. 4429h. *Penstemon geniculatus* Greene.
Matting ground. Cor. rather
small; lobes subequal, spre-
ading. ^{cor.} Glabrous inside.
Sterile stamen glabrous.
Vogelsang Pass

- No. 4429i. *Potentilla breweri* Wats.
Stamens 16, 19, ^{20, 20} 20, 20, 20, 20.
Petals yellow, emarginate,
broadly obovate. Probably the
first two counts of stamens
are incorrect due to fallen
anthers. Leaves silvery,
palmatifid. Vogelsang Pass
9800 ft.

July 14, 1911.

- = *Ivesia lycopodioides* Gray ssp. *megalopetala* (Rydb.)
No. 4429j. *Potentilla gordonii* Reck Green.
Stamens 5. Leaves "santolin-
oides" - like but green. Petals
yellow, obovate with short
abrupt claw, obtuse. Stamens
petals on margin of a glandular
yellowish open or flattish
disk. Vogelsang Pass. This is the
var. *megalopetala* Jepson.
Hook.
No. 4429k. *Potentilla flabellifolia*,
Leaves 3-foliolate, crenately
incised. Stamens 19, ²⁰ 20, 20, 20, 20.
Petals deep yellow, strongly
notched at apex. Vogelsang
Pass. All 3 of above *Potentillas*
were found on bare patch
between snowbanks within
10 ft. of each other. Rimels
water running over the

Vogelsang Pass

10,600 ft

granite everywhere.

No. 44298. *Salix* ~~*californica*~~ ^{*oresteria*} ~~Schm. & P. Sch.~~

Black tips to scales very prominent & sharply defined, especially on ♂ catkins.
(eng hairy) Stamens 2.

Branchlets yellow. Bushes 2 to 6 ft. h. 9800 ft.

- *Silene lemmingii*, in McClure Fork at 7:00-8:00 o'clock in the morning, the petals rotate, not reflexed; perhaps the observation as to being reflexed (see vol. 22, p. 101, supra).

July 14, 1911.

† The McClure Fork is a very beautiful stream. It has Mountain Hemlock, Red Fir, Juniper and Silver Pine.

Beautiful streams appear over the granite walls. Fletcher Creek has something of a gorge but not Florence Creek which is a beautiful silver appear cascade and comes directly over the wall and spreads out in a million foaming cascadelets.

- *Juniperus occidentalis*. Gleason says there is a giant tree on Fletcher Creek. He left the Merced camp and went up left hand side McClure Fork until coming to Fletcher Creek,

Vogelsang Pass

then up left hand side of Fletcher Creek as far as one can go between the domes and right there in the protected cleft is a great juniper. It has a flourishing top and holds its trunk diameter well up for about 15 feet. He measured the trunk at about 5 ft. from the ground. "As high as he could reach on lower side and at about 4 ft. on upper", averaging 5 feet. He measured it with a shoe-string and then calculated the circumference with a result of 27 feet exactly.

July 14, 1911.

- Vogelsang Pass is one of the most picturesque passes in the Sierra Nevada - perhaps the most picturesque. Its altitude is great and it is immediately ^{gauged or} flanked by high peaks with jagged cliffs, particularly on the west, whilst on the east there are the high snow ranges which lead on to Mt. Florence. There was little snow ^{below} the pass on the south side but on the north side there was perhaps a mile or mile-and-a-half of snow-fields. I collected here, in beautiful flower, no. 4429f. No. 4429g in crevices of the granite.

^{Mariposa Co.}
Vogelsang Pass to Tuolumne

gives an interesting ^{touch} to so desolate and wild a place. It speaks a sense of kinship ^{to many} by reason of its modest appearance and especially its regularity or even formality in contrast with irregular upheaval and wild grandeur.

Meadows, July 14, 15, 1911.

No. 4430. *Polentilla fruticosa* L.
Mono Pass. Petals yellow, sub-orbicular. Stamens 25 or close to it. Shrub $1\frac{1}{4}$ to $1\frac{1}{2}$ ft. high.

Mono Pass, July 17.

No. 4431. *Orthocarpus pilosus* ^{Wats.}
^{SE Tuolumne Co.} Mono Pass. Fls. whitish or white-tipped. Calyx 4-sided, markedly! Corolla, lower lip long, almost as long as galea, the teeth white. Galea with the infolded membranous margin purple on lower half, on each side of galea. Stigma very large & black, conspicuous, for so small a flower.

No. 4431a. Ditto 4431, near our camp.

Tnolunne Meadows to

No. 4432. *Salix glauca* ^{occasional Sch.} ~~var. villosa~~ ^{Reed.}
Shrub 4 ft. h. Just below
Mono Pass mt., 1/3 mile.

No. 4433. *Erigeron compositus* var. *laevis* ^{macconn.}
Composite

Rays numerous, very small
Right in Mono Pass.
No. 4433A *Erigeron compositus* var. *laevis* ^{macconn.}
Bloody Cañon upper end.
Rays conspicuous or inconspicuous.

No. 4434. Composite. *Erigeron*
^{*pygmaeus* Gray}
Rays lavender purple.
Mono Pass.

No. 4435. Grass. *Festuca ovina*

No. 4436. ^{Mono Pass}
^{= Ivesia} *Leopodioides* sp. *megalopectala*
Potentilla gordonii ^{Gray}
Garron-like leaves, glabrous.
Stamens 5. Bloody Cañon,
This is the var. *megalopectala* ^{Gray} 9500 ft.

Mono Pass, July 17, 1911.
10,600 ft.

No. 4437. *Potentilla diversifolia* ^{Lehm.}
^{var. *glauca* ^{Engelm.}}
Petals broadly ovate, truncate,
slightly retuse. Stamens 20, 20.
Disk dark purple, hairy, the
stamens from its yellow. ^{Bloody}
^{Cañon}
margin. Leaves palmate, glaucous
on upper side.

No. 4438. *Castilleja linariaefolia* ^{Bth.}
Most beautiful species.
Fls. bright crimson or
rather ^{calyx} ~~fracts~~. Calyx cut-
deeper on lower side than
on upper. Corolla greenish,
membranous margins of galea
crimsonish. Teeth small,
greenish. The red stems add
to the effect. Bloody Cañon
Also in mds at Walker Lake.
H.B. Bailey says most beautiful
meadow he ever saw. See p. 37

Mono Pass, Bloody Cañon

No. 4439. *Aquilegia pubescens* ^{bov.}Petals pale yellow, with ^{cf. 29:27}
broad rounded blade passing
into the spur below. Sepals
and ^{pale} spurs of petals pink-red.Bloody Cañon. Flowers some-
times white or very slight pink tinge.- *Oenocarpus ledifolius*. Bloody
Cañon- *Ledum glandulosum*. Bloody
Cañon.- *Penstemon*, no. 4411, Bloody Cañon
^{or 4470?}No. 4440. *Montia chamissonis* GreeneIn wet soil amongst big
rocks. Stems 1 (or 2) flowered.
Petals 5 (or 6), rotate,
elliptic with short claws.
Stamens 5 (or 6), as many as

mono Co.

July 18, 1911.

petals, the upper portions of
the filaments rotating
from about stigmas, later
when the three stigmas are
spread out, they ^(stg) lie flat
along the petals. The
stigmas seem to be 3, altho
I notice one flower with
6 petals and 6 stamens.
The plant propagates by
filiform runners which
bear a little tuber at the end
or developBloody Cañon. Flower with a
faint yellow-green eye, i.e. bases
of petals at very base colored.
Petals slightly united by their
short claws, the stamens
inserted on the claws.

Bloody Cañon

Mono Co.

Coniferae in Bloody Cañon

- *Pinus albicaulis*
- *Pinus flexilis*
- *Juniperus aristata* Juniper
- *Pinus monticola*
- *Abies concolor*.
- *Pinus monophylla*, near Walker Lake.
- *Pinus jeffreyi*, about Walker Lake and up the cañon some distance
- *Tsuga mertensiana*, high up

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Flouring on Dana Fork.

- Everywhere along the upper waters of Dana Fork towards Mono Pass were visible the ravages of the storm of day before yesterday. Torrents ^{of water} had torn ugly gashes along the hills. In Mono Cañon a snowfield was strewn with debris torn from the white-bark Pines above - needles, fragments cones and bark, branchlets and even limbs 3 to 6 feet long and 2 to 4 in. thick. Further down Bloody Cañon the snow has almost-eroded off the tops of aspen groves in bottom of cañon. Trees are taken off

Bloody Cañon

Mono Co.

young trees, old trunks have been broken off at the ground or 4 or 5 feet above.

Such trunks are up to 8 in. through near the base.

Presents a ragged appearance. Trunks with some limbs have been carried

50 to 75 yards from the places where they grew.

The Coniferous lower down do not appear to have suffered especially.

But now I have passed lower down and I come to a little flat in the cañon bottom over which there is scattered some rather fine trees - large ones - also

July 18, 1911

small ones. This point is about 400 feet above Walker Lake. Many of the defective fir trees (*Abies concolor*) were overthrown. All these trees are lying in one direction, namely southeast as near as I can judge. Now the remarkable part of it is this. The debris included 4 Juniper trees (*Juniperus occidentalis*). These were not overthrown in situ but must have been brought from a distance and for the following reasons.

1. There is no sign of torn up ground where they lie.
2. There are no standing

Bloody Cañon

Junipers near. Moreover juniper would not be expected on a rich cañon flat with fire in this cañon.

3. The junipers are not lying in the direction of the windfall of fire except one.

4. The two largest have their great root systems alongside each other and the trunks are lying in exactly opposite directions. (and beneath)

5. The third largest are lying at about right angles to the windfall. ∴

Where then did these trees come from? If one looks up the hill or rather mountain

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side one sees a granite bluff pretty well wooded with large junipers of the size of those lying below. This bluff or rocky hill is distant about 400 yards and is 200 to 500 feet higher than the flat.

The evidence that these trunks were brought here by snow-side as follows, in addition to the points above.

1. ~~Three~~ of them, ^{the largest} ^{two} are landed on the ground with trunks stretching in opposite directions. Snow would account for this.
2. The third largest has been broken at the middle about a foot tree at whose base it lies. Seven feet up the trunk

Bloody Cañon, Mono Co.

is a fresh clean scar where the tree is completely barked. This is the place where the tree landed. The scar is broader than long as it would be. It is 2 feet broad and one foot long (1.9: up + down tree).

The three largest trees have their tops broken off and all the limbs along the trunk leaving ragged stumps 2 to 12 inches long, but broken rather sharply off. The fourth tree has largely retained its branches. All three trees were uprooted. The largest tree's root system

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is 5 feet high as it lies on the ground.

The measurements of the 4 trees are as follows:

No. 1. Diam. at 2 ft = $3\frac{1}{2}$ ft.

Height = 13 feet

No. 2. Diam at 2 ft = $2\frac{1}{2}$ ft

Height = 21 feet

No. 3. Diam = $1\frac{1}{2}$ feet at 2 ft

Height = 24 feet.

No. 4. Diam at 2 feet = $1\frac{1}{2}$ ft.

Height = 40 feet.

A little lower down on trail at a turn which brought into near view Walker Lake with bordered by its groves of aspen I was astonished to see a near grove with

Bloody Cañon, Mono Co.

a border of it-filled ^{clearly} as if
cut by the scythe.
This grove is dense, composed
of thickly standing slender
poles 20 to 50 feet high and
3 to 8 inches in diameter
near the base. It was
a strange sight to my
eyes. I am not used to
the action of snow and
I have made more of this
than would another
person.

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No. 4441. *Pedicularis groenlandica* ^{Reh.}
Meadow at our camp.
9500 ft.

- *Castilleja*, no 4438 makes
a most wonderful show
in meadow at Walker Lake
see p. 51.

No. 4442. *Senecio integerrimus* Nutt.
var. *exaltatus* (Nutt.) Cronq.
Half-way down cañon

No. 4443. *Castilleja breweri* ^{var. *pallida*} ^{Reh.}
Near Walker Lake, abundant
on rocky hills. Bracts scarlet
also tips calyx. Lower teeth
corolla small. margin of
galea scarlet.

Bloody Cañon, Mono Co. Walker Lake, 8000 ft.

Pinus monophylla - bark dark brown. Superficially fissured into large + small irregularly scaly structures. Holst-oak-like, branches very stout, subequal + crooked.

No. 4444. Grass. Walker Lake

Phleum alpinum L.

No. 4445. *Trifolium wormskoldii*
Lehm. nat mdr at Walker Lake

No. 4446. *Lin. missouriensis* Nutt.
Petals pale blue. Sepals whitish, veined with purple, and a yellowish central spot. Nat mdr. Walker Lake

No. 4447. *Lupinus confertus* var. *det. C. P. S.*
Perennial. In nat meadows.

Walker Lake. Banner very white, little blue. Many branches from base forming a tufted plant. (*L. lupinus* Dougl. det. W. L. J.)

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No. 4448. *Allium bisceptrum* Wats.
Walker Lake. Fls. pink.

Ovary: each lobe with 3 thin erect crests toothed at apex, under a lens as if furnished with minute prickles.

No. 4449 *Phacelia ramosissima* Dougl.
Corolla pale lavender.
Walker Lake.

No. 4450. *Alopecurus aequalis* Sobol. (*Det. Beecher, Crampton, Mar. 1972*)
Grass. *Alopecurus*
Walker Lake ~~erect~~

No. 4451. *Trifolium monanthum* var. *parvum*
On rocky slope just above
Walker Lake. Prostrate.

Bloody Cañon, Mono Co.

Camp = 9500 ft

No. 4452 *Symphoricarpos* ^{*oreophilus*}
 Corolla regular white or
 commonly pink-tinged,
 regular. Stamens 5, inserted
 high in tube on short fil.
 Corolla clavate-tubular, a
 subglobular dilatation at
 base of tube. Calyx-teeth
 obvious. Walker Lake.

Bush 4 ft. high.

No. 4453. *Salix geyeriana argentea* (Baker) Schreb.
 Spreading bush, 4 to 6 ft.
 high. Walker Lake, wet meadow
 8000 ft.

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No. 4454 *Heuchera umbescens*
 Torr. Petals white, obovate, with
 narrow ^{limbs} Terra-cotta anthers.
 Other specimens collected
 Yosemite g.v. for further
 notes on flower.

No. 4455. *Pinus flexilis* James
 Bark (bark) in general rather
 smooth; shallowly, fissured into
 flatish plates (these ^{and irregularly} obscure, 3 to 5 in. long,
 2 to 3 inches wide). These plates with
 the surface disintegrating into
 small plates. Trees 40 to 60 ft. h.
 with trunk diameters 1 to 3 1/2
 ft. at 4 ft. Trunk bark gray
 or reddish brown. cones now green
 and much smaller than pink ones *ballicata*

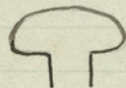
Bloody Cañon,

No. 4456. *Populus tremuloides*,
fine groves about Walker Lake,
especially at upper end; trees
60 ft. high. Also up cañon
nearly to summit. Notice
it on the great taluses, the
first plant to occupy such
arborescous
areas, forming wide green
patches wherever there is water
for it must have no fast.
Specimens represent stump
sprouts at Walker Lake with
normal foliage from near-by
tree. Notice the stipules.

No. 4457. *Phacelia frigida* Greene.
Rocky slope just above Walker
Lake. Superficially I do not see
any difference between this and
Sonoma valley, no. 4185. See p. 54, vol.
22.

Mono Co. July 18, 1911

No. 4458. *Ribes cereum* Dougl.
Spreading Bush 2 ft. high.
Calyx tubular; lobes rotate,
white; tube pink. Petals
very small, in shape some-
thing like this:



Stamens with very short filaments,
inserted high on tube.
Petals white.

- *Leucothoe cordulatus*, in fl.
- *Leucanopsis sempervirens*.

No. 4459. Grass *Phleum alpinum*
Bloody Cañon, half-way
from top to bottom (Walker
Lake)

Bloody Cañon,

camp = 9500 ft.

No. 4460. *Kalmia polifolia* var. ^{microphylla} ~~Wing~~
 not mtd at camp. Corolla
 pink-red, anther in each
 pocket.

No. 4461. *Salix monica* Bells.
 Low boreal type willow a
 foot high in camp, Bloody
 Cañon. mtd at

No. 4462. *Pinus albicaulis* Engelm.
 Pink catkins. Bloody Cañon
 [Notice that the dry foliage is dull,
 in #4455 bright green!]

No. 4463. *Phlox* ^{= p. caespitosa Nutt.} ~~Hook.~~ *douglasii* Hook.
 Corolla white. Mono Pass.
 Var. *caespitosa* Mason. See p. 57.

Mono Co., July 19, 1911

No. 4464. *Erysimum* ^{= E. perene} *asperum*
 var. ^{perenne} ~~Wats.~~
 Mono Pass, 10,600 ft.

No. 4465. *Eriogonum ovalifolium*
 var. ^{nivale} ~~Wats.~~
 Mono Pass. 10,600 ft.

No. 4466. *Salix ovestera* Sch.

No. 4466a *Salix monica* Bells.

S. planifolia monica

det. Sch.

No. 4466. *Salix monica* Bells.

Excellent development in a not-
 mtd right in Mono Pass &
 lying under the southern
 mountain guard of the pass.
 Boggy meadow, the willows
 on hummocks. 8 to 15 in. high
 Stamens 2, fil. long; scale
 black-tipped, reddish below;
 gland at base stamens
 prominent. Stigmas 2, each 2-lobed
 upper 2/3 scale = black.

Mono Pass

10,600 ft.

- No. 4467. *Potentilla* ^{wheeleri} ~~breviflora~~ Wats.
 Silvery leaves pinnate. stamens
 20, 21. Red glandular hairy
 disk inside stamens.

Mono Pass

- No. 4468. *Potentilla* ^{wheeleri} ~~breviflora~~ Wats.
 I took this because it looks
 different from preceding but
 on examination I notice in
 a brief field look no difference
 in flowers. Leaves less silvery.

Mono Pass.

- No. 4469. Composite.

Mono Pass

- No. 4470. *Pentstemon*.

Mono Pass

- No. 4471. *Erigeron* ^{claytonii} Cronq.

Same as 4434? Coll. at our
 camp., alt 9500 ft. Bloody Cañon

July 19, 1911

- *Pinus albicaulis*. Bark in general
 smoothish, rusty- or reddish
 gray, or gray-brown, scaly
 like a Tamarac Pine. Sometimes
 almost beach-like smooth.
 whitish trunk as just below Mono
 Pass east. There is a ^{fine} clump of
 it, the 7 or 8 trunks standing
 closely together, some almost
 or quite joined at base, the trunks
 up to 2½ ft. diam. at 4 ft.,
 the trees 30 ft. high. Just a
 little westerly of Mono Pass
 summit, on trail.

- *Pinus flexilis*, rougher bark than
albicaulis, more obvious large scales
 or plates; needles point more
 toward end of branch than
albicaulis in which needles
 rotately disposed

Tuolumne Meadows
Tuolumne Co. 8600 ft

No. 4472. *Polentilla breuerrii* Wats.
var. expansa Wats.
Tuolumne Soda Shrub
Stamens 20 Petals
obcordate. Disk yellow

No. 4473. *Castilleja*

Crimson calyx, very long,
longer than corolla.
Bracts little or scarcely
at all colored. Corolla
greenish. Galesa little
longer than the long
teeth of lower lip. Style
+ capsulate stigma much
exserted. Lobes of
calyx lateral, deeply
cleft. The four right
divisions of about

July 20, 1911.

equal length

No. 4474. *Allium tribracteatum* Torr.
Perianths white (silver-
white) with a conspicuous
purple-brown line down the
back of each segment. Ovary
strongly and angularly
3-lobed. The lobes squarish
in section, each lobe
brown, channeled long,
indistinctly down back.
— on gravel wash flat.

Tuolumne Falls

Carex heteroneura W. Boott. Det. K. R. M. Bailey
No. 4475. Sedge. *Carex mariposana* Bailey. See p. 53.
near Tuolumne Meadows. *Carex mariposana* Bailey. Det. K. R. M.
No. 4476. Sedge " " { *Carex* ?
" " { *trifida* Bailey
No. 4477. Sedge " " { *Carex* white
" " { *neg.* Olney
No. 4478. *Senecio*
integerrimus Nutt.
Var. *exaltatus* (Nutt.) Cronq.

^{Gossomite Park}
Tuolumne Meadows to

Tuolumne Co.

8600 ft

- ✓ No. 4479 = *Eysenia santolinoides* Gray
Potentilla santolinoides Greene. Petals white,
orbicular, stamens 15?
Disk yellowish.

- ✓ No. 4480. *Minimus lewisii* ^{Pursh.}
Folds in throat very heavy,
i.e. high & narrow, yellow,
hairy. Corolla pink
with a narrow flash of
crimson along center
of each lobe. Lobes
broadest towards apex,
truncatish, more or less
rose, at apex. Calyx-
lobes subequal. Anthers
densely ciliate.

Conness Creek, July 20, 1911.

7800 ft.

- ✓ No. 4481. *Polemonium* ^{pulcherrimum} Hook.
Corolla pale blue, yellow eye,
stamens included; style 3-
lobed, exserted, Corolla rather
deeply lobed, the lobes slightly
overlapping. Moist woods.
See p. 135.

- No. 4482. *Brodiaea gracilis* Wats.

Near Conness Cr. see p. 59.

Castilleja Meadow, Walker Lake.

- Several people have spoken about
the wonderful *Castilleja* meadow at
upper end of Walker Lake. The color,
says Miss Haskell, is a rose-
flame, not a crimson. That is a
better description than mine. The
crimson is a pale crimson but lurid,
rich but pale. There were in the
meadow many other flowers, the *Lupine*,
Onion, etc. See p. 25, ^{supra}.

Couner's Creek, Tuolumne Co.

Widely Distributed Species

- *Montia triphylla*, everywhere in damp spots about the "Meadows", Couner's Creek, etc.
- *Brodiaea lugens* ^{Greene}, with yellow per., 6 stamens, and dark brown lines on perianth. This is everywhere here about Couner's Creek, all through the "Meadows" and at similar altitudes to Nevada Fall, say. See no 4406, *supra*.
- *Penstemon newberryi*; see no. 44296, McChes Fork. Abundant ^{p. 12,} over the rocks & domes at Couner's Creek and widely distributed in the region. Wonderfully beautiful against the gray granite.

July 20, 1911

- *Minimus*, see no 4429 *supra*, and dwarf with no worms tube scarcely any limb. Common in moist place from near Dana Meadows to Couner's Ck & south to Lake Merced.
- Pussy Paws, everywhere in "spots" in granite sand.
- [No. 4475. *Barax quarifida* Bailey = *C. vesicaria* L. var. *pacifica* Kuhnthal, the latter a synonym. See Mackenzie in litt. July, 1915.
- [No. 4395. *Barax yosemitiana* Bailey. Mackenzie quotes the same synonym as under 4475.

Couner's Creek

Tuolumne Co. 7600 ft.

- No. 4483. *Lonicera involucrata* ^{Banks}
 Flowers yellow. Lower lip of
 corolla with 3 equal lobes
 a little larger than the 2
 lobes of upper lip, but all
 of equal length. Stamens
 inserted on rather than filaments
 adnate at about middle of
 tube. Style pubescent. Cor.
 exteriorly short-pubescent.
 - Rocky cliffs at Couner's
 Ck.

- No. 4484. ^{- Leptodactylon} *Gilia pungens* Bth.
 Two fls. with 4 corolla-
 lobes.

- No. 4485. Grass *Melica stricta* Boland.
 with its pendent ^{spaced} spikelets along a
 slender axis it presented a beautiful
 picture in the rocks, like pendants

July 21, 1911.

from a necklace.

- *Amelanchier alnifolia*, past
 fl.
 - *Juniperus occidentalis*, a
 tree on the granite 250 feet
 above the Couner's Creek camp
 is 32 ft. high and 15 ft. 8 in.
 in circumference at 4 ft. (on
 the average, since it stands
 on the edge of a granite
 gully). Above it are many
 picturesque trees, especially
 small one, like Japanese
 dwarfs, ~~trunks~~ 1 1/2 ft. diam
 1 or 2 feet high or a little
 more and irregular spreading
 or depressed crowns 8 ft.
 broad. Some of these irregular
 trees look like Monterey
 Cypress as on Cypress Point.

Conness Creek

Tuolumne Co. 7800 ft.

✓ No. 4486. *Phacelia eisenii* T. & G.
Dwarf. Corolla dull
white or drab. Style deeply
2-cleft. Corolla hairy at base
inside. Granite dome, in
the sand of tiny flats.

- *Calochortus nuttallii*, in fl.

No. 4487. *Gilia leptalea* (Gray) Greene
ssp. bicolor Mason & A. Grant
Corolla lavender, white
throat, shading down into
yellow tube. Dwarfs. See p. 187.

No. 4488. Grass.
Poa gracillima

No. 4489. *Aster Engelmanii* (Pursh) Greene
ssp. calligildensis (Greene) Cronq.
Leaves lavender.

Granite Park July 21, 1911

No. 4490. *Allium campanulatum* Wats.
Perianth pink brown.
Crests deeply cleft as
butter, 2-horned
as if

- *Mitella breweri*, in canon
bottom, Conness Creek. On
this trip I have found it
thus far only in moist-
river bottoms in canons.

No. 4491. Fern

✓ No. 4492. ^{= *V. nivivictum*} *Vaccinium caespitosum*
Close to ground in sloping
wet meadow, Cold Ch.
Corolla pink. Calyx rim
no more than a wavy
border.

Triolunne Co.
Virginia Cañon to Spiller
8500 ft. 8800 ft.

- Veronica
"like a baby Pansy"

No. 4493 *Carex exserta* Mackenzia. Det. K. K. M.
sedge. Det. K. K. M.

The first thing to occupy low
meadows moist granite
sandy slopes. Cold Creek.

Carex filifolia Nutt. var. *erostata* Kük.
en.

No. 4494. *Lupinus breweri* Gray.

Upper calyx - lip cleft deeply
with 2 diverging teeth; lower not
toothed (or minute obscure). Corolla
blue with a large white spot in center
of banner. Keel white on upper part.

No. 4495. *Naillandella scaposa* Gray

Anther-tube and style remark-
ably exserted. Corolla deep
yellow, tubular-campanulate.

Pappus hairy & plumose, as
long as nearly as long as
corolla tube.

Creek.

July 22, 1911.

No. 4496. *Fulcrum*

No. 4497. Grass. *Poa olneyae* Piper
Characteristic bunch-grass,
open pine slopes

- *Brodiaea* (no. 4482) *gracilis* Wats.
saffron yellow is surely one
of the most abundant things
in the mountains - Virginia
Creek. *Alpina* P. blox, no. 4463,
is also common.

- *Arenaria* = no. 4401.
same as on El Capitan*, at
Cold Creek Indw. and at Spiller
Creek in dry granite sand
soil.* (4366).

Spiller Creek,
Tulare Co.

- *Bryanthus brevifolius*, Spiller Ck.
- Conifers on side wall Virgin Creek coming down into Virginia Ck from Cold Creek Meadows: Mountain Hemlock; Red Fir; Tamarac Pine; Silver Pine
- Coming up into Spiller Creek from crossing of Virginia Ck at shoulder of hill are some fine trees of Silver Pine just below trail a few feet.
- Hemlock, Mountain, bark grayish reddish, rough & ~~rather~~ deeply fissured longitudinally, the plates or ridges narrow.
- Silver Pine, plates small, fissured rather deeply

July 22, 1911

- between them, the plates long or sometimes checked or fissured transversely so as to make square plates or 2 to 3 times as long as broad
- Hemlock, Mountain, bark grayish, young & old trees, more than any other color. Fissures long, continuous and narrow. Now I see an adult tree of large size with distinctly reddish trunk, as reddish as a Red Fir.
 - Silver Pine, color bark, reddish; plates flat on surface more sharply defined by bar than Sugar Pine branches.

Miller Lake, Tuolumne Co.

- Silver Pine, Mt Hemlock.
Tamarac Pine go right up
into the rocky bars between
Shiller Creek and Miller
Lake and some trees of
all of these are right
on the faces of the rocky
granite cliffs which border
the bars with great
blocks piled high above
one another.

- The High Sierras.
Just before reaching Miller
Lake went out on a
projecting ridge running
out high over Return
Creek. A splendid
panoramic view of the
high Sierras from Tuolumne

July 22, 1911

Creek east to Cathedral Peak,
McClure + Lyell, Ritter and
Banner. Business is very stuck
up in the near east. The
line of sunny peaks in one
continuous chain from Lyell
to Florence to Cathedral was
very splendid. Banner falls
off to the east in great shape,
making a whole of a drop.
Through a gap we saw Mt.
Clark to the south of the
Merced. Tuolumne Peak is
across the Sierra Cañon and
we get a glimpse of Mt.
Hoffman.

Just as I started down
I noticed in one of the
gently sloping chumneys

Miller Lake to Matter-
horn Cañon.

of the granite a perfect and wonderful garden of the Red Pentstemon (no. 4429 B supra). It was a delightful spectacle, this little garden of beauty in contrast to the piled-up disorder of mountain vastness we had been contemplating.

Matterhorn Cañon. July 22, 1911.
8500 ft.

No. 4498. *Ribes viscosissimum*.

Petals forming an erect-crown with the tips somewhat approximating so as to narrow the opening a little. Petals broadly ovate, rounded at apex or very obtuse, dull white. Calyx greenish, on the margins of the lobes obscurely flushed with a little pink. - Matterhorn Cañon.

- *Mitella breweri*, infl. side of Matterhorn Cañon in moist spot.

Matterhorn Cañon
Tuolumne Co., 8500 ft.

- Piñon crop of California, that is, the seeds as gathered by the Indians, is greater in value than the wheat crop of California says Eng. Britt. last ed. acc to some one here in camp, quoting it as an inaccuracy.

- *Pinus albicaulis* for camp fires. The lower limbs as they persist on the ^{dead} trunks are fine material for camp fires for alpine parties. The wood is never really wet, it usually dry, is dense-grained and hard, and makes a hot fire.

^{Yosemite Park}
 July 23, 1911

No. 4499. *Spiraea densiflora* Nutt.

No. 4500. Sedge

Carex Lemmonii W. Boott.
 det. K. K. M.

No. 4501. *Lappula nervosa* Greene

Corolla blue with white-crown, minutely and densely papillate. Fruit spring around margins of nutlets & also in centre of back.

Matterhorn Cañon to
8500 ft., Tuolumne Co.

- *Pinus muirayana*, a hardy tree, - all over the granite walls and cliffs of Matterhorn Cañon, on rocky slopes, on fairly rich ridges and in swampy flats. Abundant means of reproduction. The Silver Pine, also in this region takes not a little to the granite walls, and in a less degree the Mountain Hemlock and Red Fir. In other words all trees may be found on granite cliffs under proper conditions.

Lake Snedberg. July 24, 1911.
9200 ft.

- *Dambucus racemosa*, bush 2 to 3 ft. high, thick and spreading in best form, one individual here and another there, never abundant or common but widely distributed.

No. 4502. *Smilacina* ^{*racemosa* var.} *plexicaulis* Nutt. = *S. glabra* Tracy.

Matterhorn Cañon.

No. 4503. *Ranunculus* ^{*bolinus* Gray} *alsinoides* ^{var. *alsinoides* Gray} *Gray*.
Head of Wilson ^{*hook*}
near Benson Pass. 9600 ft.

No. 4504. *Salix* ^{*montana* Sch.} *glauca* ^{var. *villosa* and}
Benson Pass. shrubs 2 to 3
ft. high. 9500 ft. alt.

Lake Smedberg to Rodgers
9200 ft., Tholomene Co.

No. 4505. *Cassiope mertensiana*
stamens 10, with 2 long
recurved anthers. Stamens
sometimes fern (by abortion?)

- *Tsuga mertensiana*, grove
of trees with very red-
brown trunks, at head of
cirque just before climbing
last pitch of ridge to
Rodgers Lake from Smedberg
Lake. A little below this
near top of first pitch
and just under Volunteer
Peak a cluster of 13
hemlocks, 8 large ones,
which sheltered us in a
chunder, hail and rain
storm.

Lake, July 24, 1911:
9500 ft.

- *Bryanthus breuxii* - carpets
the open pine forest about
Lake Rodgers, more abundant
than I have seen it elsewhere.
An even carpet a good
deal like Mountain Osmery
but lower - great stretches
of it.

- *Ledum glandulosum* - common
here - Rodgers Lake.

- Pollen on water at Smed-
berg Lake, 2 to 3 yards
wide. A great amount of
it and very striking.
Noticed in a number of
places. After rains the
pools have shown the pollen
washed down. We have been
in constant storm this trip.

Rodgers Lake to Benson
9500 ft., Tuolumne Co.

- Hemlocks. Mountain
9 ft 9 in. + 8 ft 1 in at 4 ft
120-150 ft. high. Beautiful
trees on trail from
Meadow to Benson Lake.
Branches on old trees
mainly horizontal, spraying
out very stiffly at ends
often as well as drooping
Cones only at top. Tree
165 ft. high and 8 ft 5 in
at 4 ft. = *Tsuga mertensiana*.
- Pussy Paws, flat on the ground
day time and raised up
night-time, says Miss Elliott.
Calyptridium umbellatum Greene.

Lake,
8000 ft.

July 25, 1911.

- *Pinus monticola*. 18 ft
in diam. at 4 ft. = 140 ft. h.
This tree stands on trail a
little above Five Finger Falls,
i.e. the falls between Benson
and Smedberg Lakes on
Smedberg Creek.
- Look up at the walls with
their ^{happles} pines and junipers
on the sheer face. All
about Volcanic Peak one
see the hemlocks and junipers
on the sheer cliffs high
up in the air, just as in
Yosemite one sees the Yellow
Pine on cliffs 1000 to 2000
feet above the valley floor.

Benson Lake, 8000 ft

Tulare Co., Yosemite Park.

No. 4506. *Saxifraga bryophora* Gray.
Petals white, ovate, obtuse,
curved at the very short claw,
a couple of yellow spots
near base of main blade.
Plants from cauline
bulbets. Bulbets show-
ing at base stem.

- Red fir on trail between
Cascades & Benson Lake on
Pike at 23 ft. 5 in.

- It's wonderful to walk on
Granite says Miss
Palmer of *Arctostaphylos*
nevadensis.

No. 4507. *Lonicera conjugialis*
Smedberg Creek.

July 26, 1911

- *Lonicera conjugialis*, in fl. &
in many other places since
Lake Merced.

- *Pinus monticola*, bark in
some way or degree checked
i.e. with transverse breaks
as well as longitudinal.
Bark most characteristically
reddish-brown.

- *Pinus monticola* here, on
trail from Rodgers Lake to
Benson Lake, was foot of trail
down wall to Smedberg Creek
and not far from Five Pouch
Falls (on Cascades), same tree
noted above - 17 ft. 11 in. in
circumference at 4 ft. above
ground on average.

Benson Lake

Tulare Co.

8000 ft.

- It is difficult to put into words the difference between Mountain Hemlock and Red Fir bark - the former is gray or has more gray in it. The bark inside is more uniform in character in Hemlock. It has something of a "shaggy" quality which one doesn't see in the Red Fir.

No. 4508. ~~Amelanchier~~ ^{*Amelanchier*} ^{*pallida*} ^{*alnifolia*}
Petals narrow obovate,
somewhat turbine shaped
in position.

No. 4508. *Sorbus*

Fire Finger Falls

July 26, 1911.

Pinus murrayana, 13 ft. 5 in.
at 4 ft. on trail from
Fire Finger Falls* to Benson
Lake, $\frac{1}{3}$ mile below falls.
Also one nearer falls 11 ft 11 in
at 4 ft. * also "Organ Falls"
called

No. 4509. *Zygadenus venenosus*
Petals white, ovate, very ^{wide}
shortly short-pointed, with a
very sharply defined yellow
spot at base of each.

- *Ledum glandulosum*, in
fl. lots of it in
swampy places under
conifers.

No. 4510. *Draba stenoloba* Ledeb.
2-3 $\frac{1}{2}$ ft. h.

Benson Lake, 8000 ft.
Tuolumne Co.

- *Amelanchier alnifolia* in fl.

= *Descurainia richardsonii* ssp. *incisa*
 No. 4511. *Sisymbrium incisum* Engelm.

No. 4512. *Sorbus* ^{*californica Greene*} ~~*sitchensis*~~ _{*Rosm.*}

- Red Fir trees at camp junction of Pinto & Smedberg creeks 200 to 260 ft. high. One tree 14 ft 4. in circ. at 4 ft., another 18 ft. circ. at 4 ft. These trees 250 ft. high. Also White Fir trees 250 ft. h. and 4 to 5 diam. at 4 ft.

July 27, 1911

- Mesquite roots for use in branding fire. (*Prosopis juliflora* D.C.) Mr. Alexander says it makes an exceedingly hot, even, steady and lasting fire. The cattlemen use it for campfires for cooking. A small chunk of the root, 2 or 4 inches square makes a very sufficient fire. The branding fires for the branding irons are kept in such fires. If pine or cottonwood, were used the fuel would need constant replenishing. A tenderfoot takes too much root and he has pretty soon to divide his fire into 3 or 4 fires. The roots can be pulled up from the prairie for 5 to 10 feet, or the main chunks dug up with a shovel. - This is Texas.

Benson Lake to Seavy Pass
8000 ft. 9000 ft.

- No. 4513. *Pentstemon laevis* Gray.
Lower lip spreading down,
the middle lobe slightly
smaller, lobes not
diverging; lobes upper
lip diverging, spreading
upward. Stamens all
glabrous. Lobes blue,
tube red-purple-blue. Folds
in throat (ridges) whitish.

- No. 4514. *Delphinium* ^{depauperatum} ~~decoloratum~~ _{acc. H. Gray}
Fls blue, sometimes
lavender, sometimes pink
Lower petals blue, deeply
cleft, hairy. Upper petals
whitish, glabrous.
Looks like var. *patens* Gray.
= *D. patens* Benth!

July 27, 1911.

Triteleia ixioides Greenevar. *argens* Jepson

- No. 4515. *Brodiaea ixioides* Watson.
Perianth of one plant without
stripe above in midvein of
lobes.

- No. 4516. *Cornus californica* C.A. Muhl.
Along streams. Fls. white.
Style from an annular disk!
Very dark red (maroon) stem.
5-6 ft. h.

- *Mitella breweri*, in fl.
near Seavy Pass.

- No. 4517. *Chrysoopsis*
Benson Lake.

- No. 4518. *Allium* ^{= *A. campanulatum* Wats.} *Bidwelliae* Watson.
Benson Lake.

Benson Lake to Sea- 8000 ft. Tuolumne Co.

Camp-fire Talk to Sierra Club.
- I might as suggested talk to you about the forests of the Sierra Nevada. It is a great and important subject and it would be possible doubtless to tell you something about it that would be both interesting and instructive. But this would be more information. It seems to me it would be better to tell you the means by which you may recognize for yourself the various kinds of forest trees and so observe and study them for your self. I would rather be the means

very Pass. July 27, 1911.
9000 ft.

of making you better mountaineers than lecturing to you indefinitely about the botany of the forest or the forest zones, so that technicalities of each of you could take away your own impressions of the prevailing types of forest trees. For every one should know the trees. For this reason. Every mountaineer who is a mountaineer is something of a woodsman, and every woodsman who is a real woodsman know the forest-trees. He must know them. He may not know them as the botanist knows them. He may not know

Benson Lake to Sea- 8000 ft.

their scientific or Latin names. He may not even know their correct English names as accepted by the botanist. But he has names for them. He knows the various kinds. He reads his altitudes by them. He knows how to select wood from them for his various purposes. He knows how to build a fire in any place and especially a fire for cooking. That is one thing which betrays the timberfoot man in the mountains, his selection or rather failure to select wood, his lack of knowledge in building

very Pass, July 27, 1911. 9000 ft.

fires, especially for cooking. The woodsman makes a record of his trails by trees if there be trees; trees help him to find a way through difficult country and they provide shelter in storm. I shall speak now only of the pines, the white pines with 5 needles (whitebark pine, silver pine and sugar pine) and ^{yellow pines with} 3 needles (yellow and Jeffrey pines) and 2 needles (tamar pines). Their characters, marks of recognition, places of growth, etc., etc.
- Rodgers Lake Camp.

etc

Benson Lake to Leavenworth 8000ft.

- Gleason gave a lecture on Burbank at camp fire. He is a magazine-type of admirer of Burbank, and all his statements were such as one finds in the magazines. His first statement was: I visited Mr. Burbank shortly before coming on this trip and expressed a wish that he might come on our trip. As showing Mr. Burbank's breadth of interest and particularly his interest in nature he said: I would give anything to be with you, to be with the Sierra Club. Why I would give \$1000 a day to

Pass, July 27, 1911
9000ft.

to with the Sierra Club this summer. Now if Burbank was really interested in the Sierra Club he would join it and become a member and pay the yearly dues, \$5.00. It sounded some very flat. As a cheap way of attempting to make himself solid with the Outing Party. And yet he is always trying through his mouth pieces to make out that he isn't commercial! This his work isn't commercial and yet he is always expressing himself in commercial terms. Miss Julia Hamlin says that her uncle, a professor in

Searay Pass, 9000ft: Tuolumne Co.

a college in Pennsylvania, wrote Burbank asking for a visit. Burbank wrote in reply that his time was worth \$200⁰⁰ a day!

- Hemlock on cliffs of Searay Pass. See page 93. Great growth of Hemlocks on granite!

No. 4519. *Licharia* = *Scorzonella nutans* var. *laciniosa*. Det. B. M. H.

No. 4520. *Senecio integerrimus* (var. *mayn*) (Gray) Cronq.
Rays very long, deeply cleft and involute-tubular so as to simulate disk-corrugas.

No. 4522. *Cicharia* *Benson Lake*. *Crepis intermedia*?
Benson Lake.

July 27, 1911

No. 4521. *Lupinus corillei* Greene.
Hairy, by shore, Searay Pass lake. Corolla light blue, white-spot center banner; sides of banner rather closely reflexed. Lower lip calyx entire, slender; upper lip slender, shortly 2-cleft. Keel ciliate. Bracts slender, persistent, very long and hairy. Det. also C. P. S. of his ltr. 2/9/23.

- Tamarac Pine ^{trunk} rarely swollen at base, Silver Pine often very much swollen at base. - Kernoch Canyon
No. 4522. See p. 88.

No. 4525. *Brodiaea xioides*
Called "Buckskin Lily"; a good name.

Kevick Cañon

Tucuman Co.

8400 ft.

- No. 4523. *Viola blanda* Willd.
 near Seavoy Pass. ^{= *V. maculosa* (Gray) Steud.}
 (broadly) ^{obovate}
 Lower petal largest, purple or rather brown-
 veined. Lateral petals
 with a half twist so as to
 bring upper portion of blade
 to face downward! Upper
 petals obovate, turned
 upward. Mrs Tottenham
 says lower petal purple
 - veined. Lateral petals
 with a slight hairy
 spot at "auricle" near
 base on upper side. [Lower
 petal really deltoid when flat, a
 little retuse at apex - Stufferfield
 Cañon.]

- No. 4524. *Erysimum capitatum*
 (Dougl.) Greene
 Abnormal caused by
 insect stings. Benson
 Lake.

July 27, 1911.

- *Mitella breweri*, in fl.

- No. 4525. *Salix glauca* ^{vestera Schum.} ~~var. mitis~~
 near Seavoy Pass. Spreading
 bush, 6 ft. h. Many-stemmed.

- No. 4526. *Gallia biflora* Dc.
 = *G. howellii* (Hook.) Greene

Pink Mt. Mrs Douglas
 and Mr. Michael. Fls white
 with a blue tinge or even
 fls. decidedly bluish.

Kerrick Cañon, 8400 ft.
Tulame Co.

- No. 4527. Grass *Trisetum* ^{*spicatum*}
On granite. ~~*longicaule*~~ (Richt.)
No. 4528. *Cryptantha* ^{*affinis*}
Greene.

No. 4529. *Eriophyllum*
Rays golden yellow, 7 to
9 (!). Profuse flowering indi-
viduals and making glorious small
spots of color here and there!

- Chinese Lanterns, a name
given me by a Sierra Club
member for Meadow
Rus, esp. the male flowers

- *Acer glabrum*, Stubble field
cañon. Only a few
bushes half way down
wall from Kerrick.

July 28, 1911.

- Hemlocks, Mountain, in the
Seavay Pass country, covering
the whole country, well nigh
the only sp., the only sp. in
the pass, and extending down
the wall to bottom of Kerrick
Cañon immediately below.

Seavay Pass is a very picturesque
pass with high sharp peaks all about
it. The pass itself has small but
beautiful lakes in the first part
of it, above which rise high
granite walls on either hand. On
the narrow shelves or ledges of this
wall as the ledges rise in sharp
stepped staircase blocks one above
another as the hemlocks, one here and
one there, more abundant than junipers a
good deal, in same situation, hanging
in the narrow ledges often only a foot
wide. It's a wonderful and interesting
sight of Hemlocks. None so thin I
have seen elsewhere on granite.
See page 88.

Stubblefield Cañon
 Tuolumne Co. 8200 ft.

No. 4530. *Sorbus sitchensis* ^{var. densa Jepson} ^{Gray.}
 Stems many from base,
 spreading and bush-like,
 5 to 7 ft. high. Along
 mountain torrent! Stamens
 20. Petals white, orbic-
 ular, cupped above. sub-

No. 4531. *Salix sitchensis* ^{Jepson & John.}
 Bushes with slender stems
 curving up from down hill
 (Snow) along stream 6 to
 9 ft. h. Also stems 18 ft.
 long and 6 in. diam. at butt.

No. 4532. *Acer glabrum* Torr.
 Bush 5 to 7 ft. h.

See p. 92.

No. 4533. *Compositae* *Agoseris retrofracta*
~~in~~ sand drift in rocks

Grosvonts Park.

July 28, 1911.

- *Populus trichocarpa* Nutt.
 Stubblefield Cañon crossing.

No. 4534. *Phacelia humilis* J. & G.
 Corolla pale lavender, fading
 into a dull white center, the
 lobes round. Styles 2.

Moist-granite soil amongst
 rocks on hillslope = *P. doriana*
 Jepson & Howell.

No. 4535. Grass

Poa bolanderi Vasey

No. 4536. *Gilia*

Flowers minute. Corolla dull
 white, slightly pinkish under
 a lens.

- *Pinus monticola* here well
 up on trail Stubblefield Cañon to
 Tilden Lake, 17 ft 11 in @ 5 ft.
 right by trailhead. well up!

Stubblefield Cañon

Tuolumne Co. 8200 ft.

No. 4537. *Sambucus racemosa* L.
Petals oblong, rotate but
also spreading backward.
Bush 3 ft. h.

No. 4538. *Viola* ^{*var. fimbriatocarpa Greene*} *purpurea* Kell.
^{*ssp. mesophyta B. & C. ined.*}
Petals yellow, purple outside,
lower deltoid when flat, reflex
at apex, lateral petals with
a small hairy spot near base
on upper side, upper petals
obovate, the lateral a little
narrower.

No. 4539. *Meadow Rue*.
Thalictrum fendleri Engelm.
No. 4540. *Phlox* ^{*= Navarretia*} *divaricata* Torr.
Granite sand.

Yosemite Park July 28, 1911.

- Going up from Stubblefield
Cañon, ^{bottom} we meet near the top
the *Juniperus occidentalis*. It
is scattered over the bare granite
a few trees here, one there. One
looks up at a great block
of granite and on the bare
shelf stand a group of four
old ragged trees. On another
ledge is a tree with the
main trunk persisting all
dead and out to one side
a limb with a small dense
crown of green. Yonder is a
huge ragged trunk the crown
as it is bright and fresh but
no broader than the trunk!!
Everywhere they take the
eye, as one looks up at

Stubblefield Cañon
 Tirolume Co. 8200 ft.

the ledges rising one above another one thinks of Maxfield Parish's pictures, so highly picturesque are these trees. Some have full rounded crowns, a touch so different from the surrounding coniferous forest below and as if repeating on the heights the broad-leaf crowns of the valleys.

No. 4541. Composite.

Chrysopsis breweri Gray.

No. 4542. *Lupinus covillei* Greene.
 Many stems from perennial root.
 Tilden Cañon, 8200 ft.

July 28, 1911.

No. 4543. *Eriogonum marifolium*
 Two plants side by side. One (a) with reflexed after blooming, ^{fls.} no stamens apparently or reduced ones, style with 3 divergent capitate branches. The other plant, with flowers not reflexed, or at least not reflexed when taken (perhaps a younger plant), the perianth with stamens (no style?). Flowers very small, perianth opening only very slightly. Body of plants in ground, the flowering branches erect.
 — Tilden Cañon bottom flat

— Born Lily = my name for
Utricularia

Tilden Lake and Tower Peak
9000 ft. (Tusolumne Co.) 11,500 ft.

Widely Distributed spp.

- *Allium triboactatum* Torr. ground
sp of granite sand, white
fl., to Tilden Canon. (cf. No. 4474).

- *Calochortus multibellus* to

Tilden Canon.

- *Pentstemon*, Red, (No. 44296).
forming a beautiful garden
at the foot of a granite
block, the side of which
forms a sheer wall running
down to a little bed of
granite sand. cf. p. 52 ante.

July 29, 1911.

var. *Davidsonii* Piper

- No. 4544. *Pentstemon menziesii*
Corollas horizontal, the two
short lobes upper lip standing
up & somewhat recurving
towards each other. Lower
lip long, extended much in
direction of tube. Palate
prominent. Ridges hairy.
Ridge below (outside) very
prominent. Anthers very
woolly. Sterile stamens
densely pilose at tip.
Corolla purple - blue. - Tower Peak
summit.

- No. 4545. *Hulsea*
Tower Peak summit.

Tower Peak, 11,700

Truolumne Co. odontoloma Piper
~~*odontoloma* Fisch.~~

No. 4546. *Saxifraga* In the
midst of a rocky rivulet
on a mountain side near
Tower Peak, a massy
rapid-running stream
= *S. punctata* L. var. *arguta* Engelm. & Greene.

No. 4547. *Eriogonum incanum*
Tower Peak

No. 4548. *Eriogonum* ^{*ovalifolium*}
^{*var. nivale*}
Mat-like surface
Perhaps the *nivale* Tygh. =
E. nivale Canby.

- *Fraxinus oregana*, is in
cañon back of San Mateo
on road to Half-moon Bay
says Durrill. He also says
that he has never been
able to find *Aristolochia*
californica in San Mateo Co.

July 29, 1911.

No. 4549. *Hulsea algida* Gray
Tower Peak summit

No. 4550. Grass ^{*Poa*} ^{*nervosa* (Hook.) Gray}
^{*oleacea*}
^{*Piper*}
Tower Peak summit

No. 4551. *Arabis Lyallii* Wats.
Tower Peak summit
= *A. Lemmonii* Gray

No. 4552. *Draba Lemmonii* Wats.
In an "island" on the
snowfield of Tower
Peak slope

No. 4553 *Draba stenoloba*
Near Mary Lake. ^{*Tedab.*}

Salix petrophila caespitosa ^{*det. C. Schm.*}

No. 4554. *Salix arctica*
Only the catkins arising
above surface, the stems

Tower Peak; Tilden Lake
11,700 ft. Tuolumne Co., 9,000 ft.

entirely concealed in
the turf. *S. petrophila* Rydb.

No. 4555. Umbellifer.

Near Mary Lake.

not *Gymnocarpus terebinthinus* T. & G. but
Lomatium torreyi C. & R.

No. 4556. *Dicentra*

uniflora Kell.

Tilden Lake. Growing
floods lying along
ground.

Kalmia polifolia, in fl. —
Tilden Lake.

— *Vaccinium caespitosum* Michx.
in great abundance.

July 29, 1911.

No. 4557. *Dicentra uniflora* Kell.

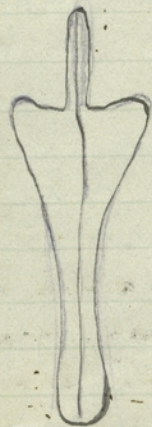
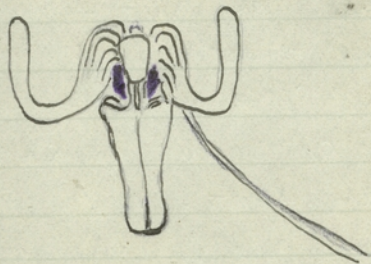
Lower ^(outer) pair petals ovate, acute,
brownish, better say brown,
next ^(inner) pair ^{petals} pink, recurring in
anthesis and making the
horns of the Steer's Head.

As seen from one side one
brown sepal makes the
forelock. The two ^{inner} petals:
very narrow base, the lower
part of this base covered by
the brown sepal, suddenly
expanding into a broad
portion, the lower portion of
which is truncate and
gradually reduced a little
to the spatulate tip which
makes the snout of the
Steer's Head, these petals

^ Ridge between Tilden Lake &
Macomb. 9400-9700 ft.

like the petals dull white & pinkish ^{outer}. The spoon-like tip of the petals cover the anthers & stigma. The filaments in sets of 3, separate, spread at base about the ovary like braces, coherent at tip. Tips of spoon-process petals coherent, making a box or cover for the stamens mechanism and demanding evidently self-fertilization. The place they inhabit - slopes where the snow has recently gone off leaving the brown bare earth and and brown dead vegetation of a previous season. Also around rocks where the snow has melted.

Stubblefield Cañon, July 30, 11
Tuolumne Co.

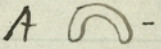


= petal (inner).

No. 4557

Ridge between Tilden Lake and
Macomb
9400-9700 ft.

No. 4558. *Allium tribracteatum* Torr.

Flowers silver-white
as one looks at them
on the ground. Brown
stripe on back of each
perianth lobe. A -

D-shaped ridge on
back of each ^{ovary} lobe, those
of contiguous lobes or cells
approximate so as to
give the appearance of

a strongly 3-lobed
ovary with the lobes
quadrangular in x-sect.

That is it looks as if
the lobes were strongly
3-ridged with a channel
down the back but the
channel really separates

Stubblefield Cañon, July 30, '11.

the parts of contiguous cells.

No! That isn't right. My
first idea was right. The
channel down the back of the
ridge cuts into the cell; the
ridges of contiguous cells are
arch-joined above instead
of the arch belonging to one
cell as I thought. !!!

Sections made in field from
the fresh flowers on the spot.

No. 4559. *Silene* ^{= *S. sargentii* Wats.} *watsonii* Rob.
Petals white, limb 2-cleft
very short. Crest 2-cleft, white,
much as in *S. lemmingii*.
Ovary reddish brown. Stamens
very short in fl. examined.
Pistil with cork-screen
curving styles exerted.
- branches

Tilden Lake and
Ridge between Stubblefield Canyon
Macomb 9400-9700 ft.

Calyx with broadish ^{dark} brown
vein running out to each
lobe, a narrow intermediate
vein forking below sinus
with a fork extending
upward to each main
vein. (The spec. 4559a was coll. down
down, at 9000 feet about).

No. 4560. *Spraguea* *umbellatum*
calyptroidium ^{var. caudicifera}
Petals 4, involute about
stamen filament below.
Stamens 5.* Sepals with
thickened, body and broad
wing. narrow

x = 3, examined in lab.
Probably a ship or a
teratological flower.

Macomb Co. July 30, 1911

- Huckleberry Oak and Bush
Blind mapin usually associated
Bad stuff, says Michael
for mountaineers to get into
now on account of the pollen
flying so badly when trailing
through it.

No. 4561. *Arabis Lyallii* Wats.

Macomb Ridge.
= *A. drummondii* Gray.

No. 4562. *Orthocarpus pilosus* ^{Wats.}
Fls. white, pink or
even reddish.

No. 4563. *Eriogonum* ^{incanum}
Summit Macomb Ridge

No. 4564. *Eriogonum* ^{incanum}
with weed. ^{*E. incanum* (Revel 1906)}

Stubblefield Cañon

Twolumne Co. 8200 ft.

No. 4565. *Leucisia nevadensis* ^{Retz.}
Stubblefield Cañon. Granite
same flat, amidst other
short vegetation. Flowers
white.

Variation in Flower Parts.

Petals	Stamens	Styles
7	8	5
6	—	5
7	7	6
7	8	5
8	8	5
8	10	5
7	10	5
7	9	5
8	7	5
8	9	5

Goswami Park
July 30, 1911

No. 4566. *Epilobium globosum* ^{Barbey.}
In cleft of rock on cliff.
Flowers white with ^{granite.}
flush of pink. the faintest

No. 4567. *Pedicularis groenlandica* ^{Retz.}
Three lobes lower lip roundish
the middle one concealed by
the strongly recurved
upper lip galea which
becomes attenuate and
upwardly curved. Corolla
crimson. Calyx short
5-toothed border. - Flat in
bottom of Stubblefield Cañon

No. 4568. *Saxifraga bryoph.*
ora Gray. Macomber Ridge

Stubblefield Cañon
Tholums Co. 8200 ft.

No. 4569. *Bolandra californica* Gray.

Petals greenish with purple border, narrow-lanceolate, recurved. Sepals recurved. Stamens 5, in throat. Ovary wholly free. - See p. 115. *Bolandra californica* Gray.

- *Pinus murayana* here on trail from Kerrick Cañon to Stubblefield, a short distance up Kerrick Cañon wall, on trail, 13 ft 8 in. at 4 1/2 ft.

No. 4570. *Erigeron petiolaris* Greene
Aster
Macomb Bridge
Rays lavender

July 30, 1911

[No. 4569, Cont. *Bolandra californica* Gray.

Petals lanceolate-attenuate, greenish ^{narrow-} with purple border. Sepals triangular-lanceolate, greenish. Calyx tube deeply bowl-shaped or better cup-shaped! with truncate base.

Petals + stamens inserted at mouth of tube, the petals alternating with the lobes.

Filaments short, not dilated.

Pistils 2, wholly distinct and wholly free from calyx. Calyx-lobes

+ petals recurving. Filaments purplish. - See p. 114. Diagnosis this page taken from fresh flowers dissected at time.

Stubblefield Cañon

Tuolumne Co.

8200 ft.

No. 4571. *Eriogonum compositum* var. *glabratum* ^{Macrom.}Macomber Ridge Rays
white or pale whiteNo. 4572 *Eriogonum* ^{lobbii}
Macomber RidgeNo. 4573. *Holodiscus*
~~discolor var. dumosa~~
~~var. microphyllum~~ ^{Rydb.}No. 4574. *Mimulus*
Stubblefield Cañon, flat
in bottom. *Mimulus Tilingi* Regel.Var. *corallinus* (Greene) Grant. Det. A. S. G.No. 4575. *Montia parvifolia*
(McC.) Greene

- Judge Norton of Stockton speaks
of the great hardness of the live
Oak* when dry. the difficulty of
cutting or splitting it.

* *Quercus wislizenii*.

July 30, 1911.

- About Tilden Lake it was
early spring. Willows were
in flower or getting ready to
flower. Great quantities of
*Vaccinium caespitosum**, covered
the whole of the cañon
bottom and lower sides. About
Mary Lake were snowfields
and the lake itself was
covered with floating ice.
Polemonium confertum was
found on Tower Peak by
Michael. I, myself, did
not see it.

* Spms. lost? No?

Piute Mt. to Raucheria
Tuloume Co.

No. 4576. *Mertia parvifolia* (McC.) ^{Green}

Flowers white, a faint flush of pink showing in the end and observable under the lens on one side the petal here ~~or~~ there, but the flowers look white.

Petals oblong-obovate, 5-nerved. Stamens 5. Style.

branches 3. - Moist mountain sides. - Kerrick Cañon camp to plateau of Piute Mt., near base of trail.

- *Cassiope mertensiana*, in fl. with bread.

No. 4577. Sedge. Det K. K. M.

Piute Mt., not mch.

Carex Jepsonii Mackenzie

Mt., July 31, 1911

- The Junipers seem to me especially interesting in their forms on the granite walls rising north-easterly from Stubblefield Cañon crossing. They are also interesting in and about the pass between Stubblefield and Kerrick Cañons.

The Hemlocks (*Tsuga mertensiana*) were in great variety of form on the northerly slope of the Maconb Ridge. No live trees were seen and so they furnish a contrast to the regular forms of the fir and firs below.

Pinto Mt. to Raucheria Mt.
9500 ft. (Tulare Co.) 8500 ft.

No. 4578. *Dodecalheon* ^{Jeffrey}
Petals 4 in this meadow! ^{Jeffrey}
crimson? no pink-crimson
a purple band at insertion of
^{narrow} stamens where corolla is
reflexed, above this a yellow
zone, passing by ^{base} white into
the pink. Look out for this
4-merous form in flora
key. - Pinto Mt. [also 4-
merous everywhere else that I
examined the flowers.] See p. 124.

No. 4579, *Ranunculus oxynotus*
on wet rocks in cleft and ^{Gray}
by rivulet on cool moist
north slope. - Pinto Mt.

No. 4580. *Senecio scorzonella* Greene
Pinto Mt.

July 31, 1911.

(*Lindl. var. lactea* Greene)

No. 4581. *Potentilla glandulosa*
stamens 22, 23, 24. Petals
a pale cream-yellow,
(sometimes I have seen
them white-!!), orbicular
or perhaps a little broader
than long, entire, with a short
claw. Stamens all at the
edge of the disk but the disk
so lobed as to make them
appear as in rows.

Pinto Mt., lower slopes

No. 4582. Umbellifer.

Pinto Mt. Lower slopes.

Ligusticum grayii C. & R.

No. 4583. *Lappula nervosa* Greene.

Raucheria Mt.

No. 4584. *Arabis drummondii* Gray
Raucheria Mt.

Rancheria Mt.
Tulahoma Co. 8500 ft.

- No. 4585. *Silva aggregata*
Segments corolla oblong-
ovate, acute, rotate or
somewhat recurving.
Stamens exerted from
tube, unequal, inserted
near summit-tube.
Corolla scarlet.

- No. 4586. *Pedicularis ^{Gray} atollens*
Corolla pink; middle lobe
of lower lip small, half the
size of the ^{very} lateral lobes, cupped
above and raised higher than
the lateral. Middle lobe with
a distinct and defined purple
line or midvein running from
lip out into middle of lobe.

July 31, 1911.

- lateral lobes with a similar
vein but stopping short at
base of lobe; upper lip with
the galea raised at lower part
into a rounded crown which
contains the stamens; this
structure produced beyond into
a slender tube-like structure
which encloses the style
and is open or cup-like at
the end (under a lens) so that
one can see the end of
the style or stigma. On the
frontal part of the "crown" of
the galea are two small
eye-spots or dots. - Pinto
Mt. - Brought in by Miss Mary
Haskell and Miss Zeile.
No. 4586 A. by ^{Esie} myself.
"Elephant's Ears"? See no. 4608.

Rancheria Mt.

8500 ft.

- *Dodecatheon* ^{*Jiffreri*} *glauca*, its stem, its leaves, and reflection in Lake on Punt Mt. See p. 120.

- No. 4587. *Pedicularis semibarbata* Gray.
On ground. Corolla pale yellow, lobes hardly larger than lip, middle lobe of which is largest. Lower pair of stamens with fil. woolly below anthers, woollier than upper pair, or upper pair subglabrous.

- No. 4588 *Arabis* ^{*repanda* Wats.} *repanda* Wats. Flowers dull white to eye, petals erect, rather closely approx.

- No. 4589. *Grignonum Lobbiai*.
Rancheria Mt., cliffs overlooking grand cañon of Tuolumne River.

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var. cryptanthus Jeps.

- No. 4590. *Orthocarpus ruscipolus* A.
Upper lip (galea) scarcely larger than lower which is very slightly inflated. Filaments all glabrous. Anther-cells divergent. Corolla rose-pink, the calyx very short ($\frac{1}{2}$ length corolla), not colored. Bracts greenish-membranous, tipped with rose-pink.

- No. 4591. *Lupinus micranthus* Gray.
^{Det. C. P. Smith. Field of} A beautiful misty blue racemes of flowers with silvery foliage on an open flat overlooking grand Cañon of the Tuolumne River. The effect was very beautiful and unlike any other Lupine.

Rancheria Mt.

Tuolumne Co. 8500 ft.

No. 4592. Umbellifer
 Delightful fennel-like odor
 but not so pungent as
 fennel. - Rancheria Mt.
Osmorhiza occidentalis Torr.

No. 4593. ^{*Eriogon*} ~~*Aster*~~ *barbellulatus* Greene
 Flat overlooking Grand Cañon
 of the Tuolumne River -

- One of the fine things about the Sierra Club trip is the ^{every} smells:
- Miss Mary Haskell.
- What glorious colors to the tree trunks, - Miss Haskell, re. the Jeffrey Pine and its rusty red trunks.

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- One of the beautiful flowers of the mountains is *Lappula nevadensis* Greene which the members of the Club generally call Mountain Forget-me-not. One lady asked me the name and I said "Stick-seed". "Oh, I don't like that name for such a delicate flower, such a lovely blue it is!" At Rancheria Mt. the plant was in fruit. The lady came and said: "What is this beastly thing that is sticking all over my dress? That, said I sweetly, is Mountain Forget-me-not! which some call 'That Heavenly Blue Flower'."

* "Such a heavenly blue. I shall call it that heavenly blue flower."

Rancheria Mt.

Tuolumne Co.

8500 ft.

- Just as we come up on Rancheria Mt. from the east the trail leads us on to a fine open summit with scattered fir trees over a granite sand area of a hundred acres covered with a heavy growth of *Myrica*, no. 4594, *W. mollis* Gray, the sunflower-like flowers and large white leaves standing from the ground making a fine show. I was asked what it was. Said I; Mule Ears. "Oh, but I don't like that name." "It's a good name". But haven't you a common name?" "Why, that is the

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common name". How do you spell it? I spelled it. M. V. L. E. Mule. E. A. R. S. Ears. Mule-ears. "Oh," was the surprised reply, "I think that is a fine name. I thought it was a scientific name with a Latin twist to it." Now this actually happened in one day four times! It shows the predisposition of people against botany. People hear what they want to hear or expect to hear. They thought, of course, I would necessarily use a technical name.

Rancheria Mt. 8500 ft.
Tuolumne Co.

- *Dodecalheon jeffreyi*. about
 the shores of a lake just
 below summit on Pine Mt.
 coming this way from Kerri's
 Cañon is a wonderful show
 of this plant, all in full
 flower. Having a million
 crimson flags held in bunches
 of 4. I should say there
 was about $\frac{1}{8}$ of a mile long
 around the lake and easily
 a million blossoms.

No. 4594. *Wyethia mollis* Gray.
 Apricot-odor to the
 full-blown flower. See
 page 128.

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No. 4595. *Pentstemon bridgesii* Gray.
 Lower lip of 3 equal blue
 lobes shorter than upper lip
 which is ^{little} erect and notched.
 Lower lobes recurved. Sterile
 fil. inserted low down, glabrous,
 as all the filaments. -

Rancheria Mt. - on edge wall
 overlooking Tuolumne Cañon.
 Corolla red (scarlet!).

No. 4596. *Horacium crepis* ^{*intermedia*}
 Open flat granite sand &
 rocks overlooking Grand
 Cañon of Tuolumne River

No. 4597. Umbellifer. *Gymnopteris*
 with- preced. *G. terebinthinus*
 T. & G.

No. 4598. Comp. = *Hazardia whit-*
neyi Green. with preced.

Raucheria Mt.

Tucumcaco Co.

8500 ft.

No. 4599. *Saxifraga* ^{*odontoloma* *Pur. Risch.*} ~~*vestivalis*~~

Sepals red-brown, closely reflexed. Petals orbicular, obtuse, abruptly short-clawed, white, with two yellow dots symmetrically placed near base of blade. Stamens 10, club-shaped, 5 opposite, 5 alternate with petals. Ovary whitish, the upper half abruptly purple - Raucheria Mt. border branching rivulet.

= *S. punctata* L. var *arguta* Engl. & Lem!!

August 1, 1911.

4600.
No. 4600. *Lonicera involucrata* Benth.
Corolla yellow, lobes subequal, i.e. not obviously unequal.
Fil. glabrous, inserted about middle of tube. Style ~~very~~ slightly short hairy on upper part mostly, with a dilated base which is somewhat cup-like or in any event annular. Shrub 2 ft. h. - Raucheria Mt. at camp.

sagittata Nutt.

No. 4601. *Balsamorhiza*,
Granite sand rock "open"
overlooking Grand Cañon
of the Tucumcaco River.
Root resinous and balsamic
odoriferous.

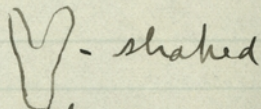
Rancheria Mt.

Tholomne Co.

8500 ft.

No. 4602. *Geranium richardsonii*
 Petals white, obovate, very
 obtuse, pink venation

No. 4603. *Veratrum californicum*
 Perianth segments, obovate,
 the outer somewhat broader,
 all with a



green gland at base, the
 standard of the Y on the
 claw. Flowers dull white.
 One plant as high as
 Miss Haskell's head!

Yosemite Park

- August 1, 1911.

- *Polemonium humile* with
 stink-like odor. = *P. pulcherrimum*
 Hook.

No. 4604. *Samolus greenei*
 Perianth indigo-blue; segments
 5-nerved in center.

- Rancheria Mt.

- Rancheria ridge: *Monardella*
odoratissima, filling great
 open spaces in the forest on
 the ridge, flowers white;
Linum catharticum, black
 fls. gone here & replaced by
 half-grown twin berries.

Silene acaulis ~~Keel~~
~~corolla~~ ~~gray~~

No. 4605. *Lupinus*. In granite
 sand, spreading. Banner
 nearly white; keel ciliate.
 - Rancheria Mt.

Rancheria Mt. to Hetch-
Tholune Co. 8500 ft.

- * No. 4606. ~~*Centotheca*~~ ^{*Centotheca*} ~~*venusta*~~ ^{*venusta*} Gray.
Corolla red; double white
spot at each sinus (one on
each lobe); throat
greenish. Anthers twisted
stigmata?. Dry lake,
800 feet above Hetch-Hetchy.

- No. 4607. <sup>*triangularis* Hook.
var. *trigonophylla* (Greene)
Greene.</sup> *Senecio*.

In marshy meadows
forming wonderful
bright gold spots in the
flower gardens of Rancheria
Mt.

- * No. 4608. *Pedicularis groenlandica*
Called "Elephant's Snout"
by some of the people of
the Club.

Hetchy, August 1, 1911.

-Teratology. See double spike
under no. 4608; that is a
forked spike.

- No. 4609. *Epilobium brevistylum* Barbey
Rancheria Mt.
Corolla white.

- No. 4610. *Eriogonum nudum* var. ^{*nudum*}
Rancheria Mt., half-way
to Hetch-Hetchy. Plants, also,
seen 1/4 size this.

- No. 4611. Grass *Elymus glaucus* ^{Buckl.}
Rancheria Mt.

- No. 4612. Grass ^{= *S. hystrix* (Nutt.) J.G. Smith}
Sitanion ^{*californicum*}
Rancheria Mt.

- No. 4613. Grass *Ora obovata* Piper
Rancheria Mt.

Last 3 about 1/3 way down to
Hetch-Hetchy.

Rancheria Mt. to

Tronolune Co., 7500 to 6500 ft.

No. 4614. *Madia* ? *elegans* Don ex. Lindl.
Rancheria Mt. with weed.
Rays clear yellow.

No. 4615, Comp. *Stephanomeria* ^{*lactucina*} ~~*lactucina*~~
Rancheria Mt. $\frac{1}{2}$ way down
to Hetch-Hetchy.

- Exhibit of cones & branches
at Kerrick Cañon, upper zone
conifers; another at Hetch-
Hetchy, lower zone conifers. The
exhibits were highly appreci-
ated by members of the club as
enabling them to learn the
names of the trees. Carpenter of
the U.S. Weather Bureau took
a picture of the Hetch-
Hetchy exhibit for the pur-
pose of showing the educational
value of Sierra Club outings.

Hetch-Hetchy, Aug. 1, 1911.
3600 ft.

- Judge Norton says: In
early days in the San Joaquin
Valley, Valley Oak was used
to make posts for fencing.
Certain of the posts from
heart wood would last a long
time - as long as redwood!
But the average were liable
to decay particularly if they
had some sapwood. One
great objection to them was
the hardness of the wood
after the wood was really
dry. Then it was well-nigh
impossible to drive a
nail into them, so hard
is the wood. The nails would
double right up and not
go in.

Hetch-Hetchy

- Madroña, 10 miles west of Crocker in Packard's Gulch, south of the S. Fork of the Tuolumne and about 4 miles S.E. of Gelfox Spring
- L. E. Ellwell. About 20 trees, north slope
- on Golden Rock ditch.

P.O. = Groveland, He speaks of 2 varieties of Cedar, a white and a red. The red has a redder heart ^{wood} and lasts a lot longer than the white. Jeffrey Pine has a resin which you can chew for an hour, not so the Yellow Pine. [Some one else remarks the Jeffrey Pine Resin tastes orange-like.]

August 2, 1911

- Poison Oak, first met with coming down from Rancheria Mt. at about 4500 ft. alt.

- Miss Mary Keshell says: "Nothing is a trifle to New Englanders. They pay attention to living with a great deal of thought and live in most remarkable comfort. When I first went to Wellsley I was astonished at the comfort in a Wellsley girl's room. The New Englanders' life is complex because everything is important. They have no idea of putting aside or behind everything for

Hetch - Hetchy

one really big thing,
for some great thing
that really matters. Now

I was raised in a
community* where life
is very simple but
big. It was a good
thing for me to go live
in a society complex
and I enjoy it, but
I should not enjoy
having been raised in
such a society.

The New Englander
has no sense of social
obligation. He believes
in taking care of
himself and he has
a high civic sense because
* South Carolina

August 2, 1911.

that is a personal duty.
But he is without sense
of personal obligation."

Hetch-Hetchy

Francis
 - Farquhar says: In Pate Valley, one mile from junction of Pate Creek with Tuolumne River is a giant oak tree twelve feet in diameter. Its trunk runs up 15 ft. before branching into 3 great arms. The trunk holds its diameter well up to the point of branching. It is a little swollen at the base. We passed it coming down the south side of the river. It stands on the flat amongst other trees. Other parties have passed the tree. There is no trail but parties coming down the

August 2, 1911.

river would naturally pass the tree. A.H. Allen says the tree is Maul Oak.* Another large tree stands near the painted rocks or ^{Indian} inscriptions.
 * *Quercus chrysolepis*.

Hetch - Hetchy, 3600 ft.

- The great satin column of Yellow Pine: The most beautiful Yellow Pine column I ever saw: When you come up the Hetch-Hetchy
- Crocker Trail not far from the bottom you ~~pass~~ ^{attain} a little ridge or crest and drop suddenly down 20 or 40 feet into an ideal little valley of an acre or so (or "flat") and on the further side rising out of the Black Oak is this fine column with its all ^{satin} plates, its exquisite straw-yellow and overlaid a certain satiny green which simply entranced me.
- Marzamita, its gray foliage here, has brightest bark in life and whitest in death. ~~the~~ Hetchy.

August 3, 1911.

- Heliotropism in *Oenothera grandiflora*. In the lower Hetch-Hetchy Valley, below the "dike" across the valley, the great meadow there is filled with Evening Primrose. Above the meadow grasses and sedges rise the yellow flowers in continuous patches for a mile or more down the meadow. The best view of the morning sun, entering from the gap of the Hetch-Hetchy gorge, stream down the meadow and every flower turns to meet them. It's a fine thing to see. We trail on down and look back: the show is scarcely observable.

Hetch-Hetchy to Brocker's
3600 ft.

No. 4616. Grass. *Dactylis glomerata*
Hetch-Hetchy lower midw

No. 4617. = *H. brachyantherum* Nevski
Grass *Hordeum nodosum*
Hetch-Hetchy lower midw

No. 4618. *Philadelphus Lewisii*
Pursh var. Hetch-Hetchy.
↑ *californicus* Gray.

No. 4619. *Gilia leptalea* (Gray) Greene.
ssp. *leptalea*
Corolla brilliant brick-red
(light-cerise - like Haskell -
purplish-pink), whitish
in throat; stamens of
unequal length. -
Open pine woods.

- *Libocedrus decurrens* Lie
16 ft. 4 in. circ at 4 ft.

August 3, 1911.

No. 4620. = *E. capitatum* (Dougl.) Greene
Erysimum asperum
ob. Hetch-Hetchy lower midw

No. 4621. *Cotyledon laxa* var. *nevada*
densa Jepson. With preced.

No. 4622. Grass *Agropyron caninum*
With preced.

No. 4623. *Brodiaea grandiflora* ^{Sm.}
B. coronaria Jepson. With preced.

No. 4624. Grass
With preced

Agrostis exarata Trin.
A. *subsecundum* (Link.) Hitchc
(det. B. Crampton, 1972)
No. 4625. Grass *Agropyron*
caninum
Hog Ranch trail

No. 4626. *Eriogonum* ^{roseum (1857)}
virgatum
Hog Ranch trail
↑ *salinum*
(1857)

Hetch-Hetchy to Crocker

Tudorwine Co.var. *subulatus* Grant. det. A.L.G.No. 4627. *Mimulus floribundus*

Heavy with-dew at noon!
 Gray with-it. Corolla
 with equal lobes but
 evidently bilabiate, clear
 lemon yellow. A few
 brown dots in throat.
 usually an oblong whitish
 spot at sinuses between
 middle & lateral lobes lower
 lip. Throat very open.

Lobes broad (narrowly oblong),
 truncate. - Hog Ranch.

No. 4628. *Mimulus guttatus* DC. ^{det. A.L.G.}
 var. *argenteus* (Greene) Grant?
 subglabrous. Not dewy!

Stimpy bilabiate yellow
 corolla. Palate large and
 closing throat, a few
 definite brown dots.

August 3, 1911.

Middle lobe lower lip broad,
 almost twice as broad as
 lateral lobes which are, too,
 broad, sharply notched at
 middle. Lobes upper lip erect-
 but-turned backwards at tip
 towards each other in such
 a way as to approximate.
 Corolla yellow. - Hog Ranch,
 = *M. guttatus* DC. det. W.L.S. 5000 ft.

No. 4629. *Heterocodon rari-
 florum*. Corolla purple-pink,
 rimmed with dark purple, like
 in shape to the *Beliflora* of our
 gardens but very small.
 Stamens apparently 5 but
 probably sometimes fewer.

Hetch-Hetchy to Crocker's

Trilumina Co.

- No. 4630 *Mimulus* Biondetti ^{Eastw.}
^{Det. A. L. G.}
 Corolla red, two obovate
 yellow spots on palate
 margined by purple. Purple
 spot at sinus each lobe.
 Lobes subequal, notched.
 Corolla evidently bilabiate

No. 4631. *Strobilifer*

Hog Ranch trail 4700 ft.
 to 5300 ft.

No. 4632. *Comp. Stephanomeria lactuina*

Hog Ranch trail.

No. 4633. *Carex*

Hog Ranch
C. vesicaria L. var. *pacifica*
 (Bailey) Kük. .

August 3, 1911

- No. 4634. *Trechostema* ^{oblongum aff.}
 Hog Ranch. Crocker's sta.

- No. 4635. *Mimulus* ^{Det. A. L. G.} Torreyi Gray.
 General color pink or reddish
 but inside limb corolla &
 throat pale! Hog Ranch
 Crocker's.

- Professor Clifford * says:
 Yes, wire running too heavily to
 laboratory equipment. If we
 would throw all the laboratory
 equipment out of the window the
 "good men" would show what
 they were worth. New time is
 spent manipulating some
 complicated instrument for
 measuring time or for some
 similar end.
 * of Harvard.

Hetch-Hetchy to Crocker's
Aug. 3, 1911

- white firs, dark or dark brown bark, in Crocker Forest, but chipping white

No. 4636. *Eriogonum* ^{roseum} ~~virgatum~~
Hog Ranch. to Crocker's
4500 ft

✓ No. 4637. *Malvastris*
^{crispiflora Greene} *Sidalcea* Hog Ranch to
Crocker's sta. *S. spicata* Greene.

✓ No. 4637a. *Sidalcea glaucescens* ^{Greene} Hog Ranch

No. 4638. *Colyadenia* ^{multiglandulosa}
^{DC. ssp. bicolor (Greene) Keck} Crocker's sta.

No. 4639. *Ranunculus aquatilis*
Crocker's ^{L.}

✓ No. 4640. *Mimulus* ^{moschatulus Dougl. var. longiflorus Gray. det. A.S.G.} Crocker's
Corolla yellow, limb narrow.
Purple-brown ribs on lower side etc.

4500 ft. August 4, 1911.

Tuolumne Grove
Named Trees

- General Lawton
- Learning Tower.
- The Narcissus Pride

Total trees in Tuolumne
Grove = 24.

- I was assisted in the count of the trees in the grove by Mr. Geo. Edwards, Miss Mary Haskell, Miss Reynolds, Miss Kearney, & Miss Avery, all of the Sierra Club outing party. I scouted the periphery of the grove pretty well and felt that all the trees were counted. Miss Haskell was quite keen about counting.

Brocker's to Brane Flat
6300 ft.

- What a fate for a life to live 23 or years and then be christened with the name of a man who has lived 50 years and when the curious passerby sees the name says: "What's that?"

No. 4641. *Minimus Tilingi* Regel
Var. corallinus (Greene) Gaud. Det. A. S. G.
Tholium Gray. Corolla yellow, throat open but palate prominent, lower middle lobe lower lip notched, almost twice larger than lateral lobes.

No. 4642. *Rudbeckia californica* Gray.
Brane Flat.

August 4, 1911

No. 4643. *Lilium washingtonianum* Kell
Perianth pure white, deliciously pink fragrant. "August is their month". - Brane Creek.

No. 4644. *Phacelia ramosissima*
Doug. Perennial! Many stems from a stout taproot! Brane Flat.

- Taproot none in Yellow Pine, Incense Cedar, White Fir, Red Fir, Big Tree.

No. 4645. *Mitroacraea*
Brane Creek.

Sidalcea glaurescens Greene.

No. 4646. *Silene montana* (L.) Wats.
Petals white, 4-cleft at apex, the limb entire below.
Crane Creek.

Petals not segmented as in *Lemmonii*.

Crane Flat

(walk above "Gozenile").

No. 4647. *Sambucus rac.**Boykinia major* Gray.

Petals white, obovate, more or less minutely crenulate. Stamens 5, inserted on edge yellowish disk.

Calyx-segments triangular, acute. Carpels 2. Filaments slightly dilated downward.

- Crane Flat to McCauley's on Crane Creek!

No. 4648. *Beaunothus divaricifolius*.

Kell. Procrumbent form in open forest, very leafy and making a most remarkable close covering. Foliage glaucous or bluish!

- Crane Creek.

August 4, 1911.

- Trail through Mountain Misery, clean cut, ^{stems} broken very easily. Its aromatic (or Hamamelis-like, say Club members) odor*.

No. 4649. *Gilia aggregata* Sp. On a little sand-flat at Crane Flat. = Var. *bridgesii* Gray.

No. 4650. *Cirsium andersonii* Japan
Crane Creek.

No. 4651. *Trifolium breweri* Wats.
Wules like it. Crane Creek.

* Several Club members speak of the Witch Hazel odor. The trails broken through it are sharper and cleaner than through any other brush. Its stems look black in places.

Three Rivers

- Arrived in Three Rivers today. Came out to Merced ^{from El Portal} Saturday night and down to Lema Cove Sunday. I am amazed at the development between Lema Cove & Rexler. The latter is fast becoming a city. The stiff gravelly and clay lands in the direction of Lema Cove, hopelessly dry and desolate and far-reaching when I walked over them leading two pack-mules on my way to Mt. Whitney in 1900 now present as ~~wide~~ a landscape of rich dark green orange and lemon orchards. And the development has only begun.

Aug. 7, 1911.

Went to Walter Fry's place. He is away on an inspection trip of the Park with Major Hughes and I came back to Three Rivers village. Put up for meals at the "Three Rivers Hotel" run by the Cummings. Was received in a most friendly manner by the Brittons. Ernest Britton had me to dinner and afterwards to supper. What a meal that first dinner was after some weeks in the mountains! Little Irma Britton came running to meet "Grandpa" Welch and myself on the garden walk and said "Stay to supper, Grandpa! All the things on the table are good things to eat." Certainly they were. Good crisp hard-crust hot biscuit. Fresh tomatoes. Lovely peas. Fresh peaches. Fresh milk in abundance. And, as Irma would say, lots of other things. Frank Britton had me all night. Blackberries and strawberries all fresh. Fresh peaches and Cantaloupes! Chicken! etc. etc. etc. Watermelon! Apples!

- *Quercus douglasii* - The Blacksmith at Three Rivers (Austin) says of this: Wood is no good for wagon work. The longer it lies the brasher it gets. It would be good for furniture.

Three Rivers

- Ernest Britten, former Forest Supervisor, California National Forest, says; amidst the fearful forest fires just raging through the San Bernardino National Forest: "All this is a result of the National Forest policy to keep fire out of the forest, but not using fire. It seems as if in the case of the San Bernardino fire they did not know how to backfire. Backfiring is a proper way to fight fire but it must be done with a keen eye to the conditions, the lay of the land, the canyons, the character of the brush, the lay of the opens, the probable

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direction of the wind when the fire starts. Every precaution must be taken that your backfire does not in turn become a head fire. That is only to spread the fire faster. There is no use going down on a side hill in dense chaparral. The fire is burning fiercely and running rapidly - sometimes putting a mounted man to it to get out of the way. The place to fight up-going chaparral fire is at the edge of the pines. If the fight is handled properly it can be stopped here. I believe in burning in the early spring so as to clear

Three Rivers

up the forest, clear it up a little anyway. Set fire just before fire will run and let it work slowly. Set it along the ridges and it will burn down into the cañons, i.e. just in the opposite direction of the destructive runs. I believe in cattle in the forest and sheep in the forest? Of course always under control. Sheep may be used to great advantage in certain places especially as fire protectors. A grazing inspector came into the California Forest while I was there and we went out on a trip of inspection

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to thresh things out. We got together on ^{practically} everything except sheep. Finally we came to a place where the timber was somewhat thin but a ^{mature} fine stand of young pine 5 to 15 or 20 feet high stood under it. I asked the inspector what harm grazing sheep could possibly do to the trees there? This last argument ended with his saying: "Well, I don't believe in sheep anyway!" Fire lanes can be cut in chaparral but they have to be cleared every year to be of any use. In my judgment this money were better spent on trails.

I have known a band of sheep

Three Rivers

and two donkeys to go eighteen days without water. Their necessary liquid was obtained from green feed. This was on the desert side too. Sheep can be grazed 12 miles from water by drinking six miles a day for two days and then back again."

Tessing on the Mineral King -
 - Henry Delong, teamster, 63 years old, stocky, smooth-shaven round face solemn-looking but with a twinkle in his eyes, insisted on loading his hay bales across the bed instead of lengthwise. The tiers were four high and they shifted on him coming up to

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Three Rivers. The bales got "shick" and some of them were sticking out of the side of the load a foot and a half. Henry tried to pry them back but he finally had to call on the other boys to help him, Clarence Britten and "Bob". These tore the load off the wagon (32 bales); down went the bales, bobbing to the ground anyway, nearly knocking the men over as Clarence nipped them down. Then they started to reload. The "boys" made it particular point to chaff old Henry whilst they were reloading. The young fellows jested the old man harder and harder. A little before the reloading was finished Henry said,

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"Now, you fellers know I wouldnt stand your slang but that I's got to have ye to get this load on again". The young fallows shouted in glee. They knew the tactical advantage of their position and so they went as before: "What's the good of reloading for Henry, He'll drive his team off the River Hill anyway"! Henry will shore up his wagon over. Four horses is too much for Henry"! Said Henry in assumed wrath: Now you fellers. I'm driving ahead of you, and I'll tip my load over right ahead of you at Atwell's and every one of

August 8, 1911.

you will have to help load up again to clear the road!" When a teamster starts out with hay he tightens his stay chain over the load and then in about a mile or so, after the load settles, he tightens it up again, driving carefully meanwhile. By such time the load ought to be "set" and ready for final binding down with the binding chain. If there is danger of a bale slipping, the teamster goes into the wood and cuts a Red Bud (*Cercis occidentalis*) sapling four feet long and drives it into the bales. The stick

Three Rivers

will prevent any shipping.

Red Bud is better than any other kind of brush because it is slim and tough and straight. Other brush is mostly crooked, or not tough enough (like willow). A curving piece of Red Bud will do all right but the stick must not be crooked. Red Bud is a main reliance of the teamsters driving heavy loads on the difficult grades of the Kanabah district.

- Buckeye, California - I noticed several trunks & forks of this in front of the blacksmith's shop in Three Rivers. I mistook them for sycamores at first. The trunks were very scaly with large scales. Used for brake blocks.

August 8, 1911.

- Ernest Brillen says of South Fork Big Tree Grove: "There must be a section in there with Redwood on it". But he was very doubtful in spite of the fact that he had hunted over it many times. I asked him about the Mule Creek and Lake Canyon groves but got very little and nothing that I could well put down. Now here is a man who is, perhaps, more familiar with the region than any other man. He has been over it both as a hunter and (later) as a Park Ranger. So if my table of Big Tree groves turns out to be very inaccurate I shall be prone to fall back upon the lack of information available except where I have personally visited the groves. It one can't get

Three Rivers, Aug. 9, 1911.

information from people in the district - and people who know the region, - than I feel more than ever justified in making a "preliminary break" at a Big Tree table.

- Coming up the Kaweah River from Lemon Cove to Three Rivers I was much struck by the burnt umber or red-brown spots of the Buckeye trees scattered all over the cañon sides. The color was rather dark but had an almost lurid or flame quality. I have never seen so rich & deep a color on Buckeye before. We have nothing like that in the Coast Ranges. Why have I never seen it on the Kaweah before? Is the season different?

[Yosemite Park, July, 1911.
Cont. from p. 159.]

Final Note on Equipment, 1911.

- Light weight underclothes, no change.
- Flannel shirt, no coat, wool sweater.
- Lighter weight trousers than corduroy which are too heavy on the hips and unnecessarily warm.
- Sleeping bag, heavy sint-wool under-ware instead of pajamas. No extra blanket needed. Where very cold as at Tilden Lake, slept in thick clothes on.
- One wool shirt is enough for hips the extra light weight shirt for linen change.

Yosemite Park

[Cont. from p. 159]

Bones and Squirrels

- Squirrels girdle the scales from Sugar Pine cones, leaving "corn.cobs" beneath the trees. Also Yellow Pine. They do not touch Silver Pine (?) or not in that way. They take the seeds out of whitebark Pine practically destroying the cone but not leaving a cob, the cones go to pieces. They do not touch Hemlock cones (?). I think I have seen the "cobs" beneath Diggs Pine cones.

July, 1911.

Tip on Leader of Hemlock.

- At Conness Creek the leaders as a rule pointed north at 10:30 am but elsewhere I have seen them pointing in any direction, that is two trees side by side point in opposite direction. The Hemlock would be of no use as a compass in California. The traveler must depend on the sun which shines so constantly unobscured, on the ridges, streams and landmarks especially the latter where there are prominent peaks or shoulders

Yosemite Park

[Cont. from p. 44]

Flowering on Mono Desert Plains.

I did not go out onto the plain below Walker Lake. The time was too short and the botanizing about Walker Lake too much. But the Knapsack party found the plains one flower-garden and spoke much about it, especially Miss Fife. So allows for the late season, late June and early July would be a good time to visit those plains. One could come in by rail from Reno. Miss Fife says the *Matilija Poppy** is abundant and in full flower along the ^{irrigating} ditches.

* = Mexican Poppy undoubtedly.

July, 1911.

[Cont. from p. 102]

Destructive Effects Wind & Sun.

- Half-acre Hemlock, Mountain, overthrown up-hill near Town Peak. Snow-slide below Hall Lake, most tremendous mix-up of logs. See vol.

p. also. See p. 29 supra for wind and snow in Bloody Cañon. See p.

of vol. for avalanche in Lyell Cañon.

- Ernest Britten explains the huge levialthians (short but huge water-worn trunks) of Big Trees that I have seen in the river bed of the South Fork, water worn just as small pieces the size of one's finger are water worn. He says that a huge landslide came down in that region some time ago and carried the trees down into the river.

Yosemite Park

- Capt. Tyne:- Clark says he is the greatest astronomer in the world in the matter of the ^{extent} duration of the universe and the position of the solar system in it. Naturally in this problem he runs into the matter of climate. He has been at the Solar Observatory at Mt. Wilson for two summers now. He is of the University of Göttingen in Holland. He says the trees indicate clearly dry + wet years, cold and warm or sunny years. See page 181.

July, 1911.

Camp Equipment.

- Have worn a wool army shirt at 8000 to 11000 feet and found it perfectly comfortable + sufficient without coat at all times day. Rarely I put on a coat in evening or when perspiring. But get a little down in the Sierras and the shirt is uncomfortable warm.
- Palmeri Rucksack - dimensions: 1 ft. 6 in. wide; 1 ft. 4 in. long (up + down); outside pocket; dust flap; inside pocket; shoulder straps, leather binding on edges; waterproof light cloth.

Yosemite Park

[Cont. from p. 66]

Effects of Hail in Matter-
horn Cañon and Wilson
Creek:-

In Matterhorn Cañon we had a fine rain, thunder and lightning afternoon. Some hail. The next morning going up Wilson Creek I noticed how it had affected the flowering plants. They were bedraggled or even destroyed. The *Sambucus racemosa* was in full flower. Pretty nearly all the blossoms seemed destroyed. Between Smedberg Lake and Rodgers Lake another storm overtook us on the trail. The hail stones were as large as moth-balls and looked not unlike them. The effect on flowering plants was similar.

July, 1911.

Trees of California

- Mr. Clark of ~~Paradise~~^{Red} ~~Paradise~~ says: A Belgian astronomer by name of Capt. ~~tyne~~ has been for some time at Mt. ~~Howe~~. He is interested in determining climate of former times by means of tree records. He has taken trees whose age corresponds to temperature and rainfall records in European towns and found that he could interpret the climate from the wood rings, their width and microscopic character. He thinks that the greater thickness of the ring on one side the tree is due to high sunshine in that season. He thinks the Big Trees and other trees in California would form an admirable means for determining ancient climate. See p. 178.

Yosemite Park

Trees of California

- San Luis Obispo as a typical ^{weather} station for South Coast Ranges as used in my Silva is no good. Not at all representative for several reasons:
1. The Coast Ranges (Santolucias) approach the coast so closely and are so high that the result is increased precip.
 2. The loam lies very near Point Conception which exerts a marked influence on the weather.
 3. San Luis Obispo lies between the southern and northern storm zones in such a way as to get an unusual amount of rain.

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Trees of California

- Torrey Pine on North Island, New Zealand, grows larger than in San Diego say, Carpenter of the U.S. Weather Bureau service.
- Hemlocks, Mountain, grow in clusters on side walls about Volcanic Peak above Smedberg Creek. Why should they grow in clusters? The number is from 3 to 15 and the trunks stand close together, even touching.
- Explain common names of trees.
29. Jeffrey Pine. My story of Jeffrey at the Rancheria Mt. camp caught on tremendously.

Yosemite Park

Trees + climate

Trees of California

- People say climate is changing. Of course people don't remember from one year to another but the tree records prove that the climate has not changed radically since tertiary times. We can get ideas of the tertiary climate from the best conditions under which are growing our various species, like Bishop Pine cf. *Sequoia*.

- See. p. 181.

- See Slearns, On Growth Cert. Cal. Forest Trees + Meteorol. Infer. Sug. (Rep. Am. For. Assoc., 1882).

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Camp Equipment

- I have not carried a fountain pen for several years because always getting out of order, but a traveler's ink-well. The latter is also a great nuisance to get ready to write, but after that I make better records with it, using Higgins Eternal Ink. Mr. Harding says this ink will run in a fountain pen. I have not found this to be the case but a fountain pen made should be had that can flow Higgins.
- A woolen army shirt without coat is the most comfortable thing I wear at the 8,000 to 10,000 altitudes. It is a fine proposition, the brown colored army shirt.

Yosemite Park

Pygmy Flowers of the
Sierra Nevada.

On moist spots where there is sufficient soil, especially in open pine or coniferous woods grow a great many kinds of dwarfs. These are tiny things 1 to 2 or 3 inches high, occurring in hundreds or even countless millions. The flowers sometimes as big as the rest of the plant. Their interest is in their small size, uniformity of bloom and vast numbers in which they occur. They give to the spring woods a freshness, a delightful fulness, a radiance which is to

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me highly pleasurable. The woods are delicately decorated with the color of these living things. They give to it a starry light. Up here in mountains where there is the vastness of space, one turns in relief to these fairy worlds, these tiny pygmies which stir the imagination. Amidst great and terrible mountains, vast forests, woods of Sequoia and Sugar Pine fit for Robin Hood and Rurik here are Audubon's Angels. Dreams with all the "making" of fairies and fancies. In this class of dwarfs I include the small *Mimuli*, the *Gilia* no. 4429c; no. 4487; no. 4422.

Yosemite Park

Trees of California

- Our Sierra Club members hike through the Merced Grove so fast that they get no conception of the grandeur of the Big Tree. They can get take an upward squint at the Big Tree and hurry on and get beyond the limits of the grove in two or three minutes. Now at the Merced Grove the most unexpecting tourist has the impression forced upon him by seeing far mile after mile these great trees, the impression of the great giants being continually impressed and re-impressed upon the mind.

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But it is indeed remarkable in what way some of our Club members will speed through the grove with a rapid look as tho' for all the world like tourists in European picture galleries.

- Lucerne Cedar, trained mountaineers seek shelter of tree for their sleeping bags because auto avoid the more than other conifers.
- John Muir Silver Fir.

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- *Achillea millefolium* -
 Yerba de la Mueta, is a
 name used by Spanish
 Californians in the Santa
 Lucia Mts. - Mrs. Douglas.

Water-side Plants in Shade

Along rimblets in deep
 forests in Sierra:
Saxifraga peltata on S.
 Fork Tuolumne; also near
 Crockers. Also *Boykinia*
Saxifragas along streams.
 Cf. no. 4649. between
 Crane Flat and Wellman's.

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Shrubs of California

- Bestim heading: Fire, Mutilation
 + Regeneration. Fires in chap-
 arral, stump-sprouting or lack
 of it

- Oaks. vars. of *Quercus dumosa*.
 Var. *alvordiana* is a remarkable
 variety but is really no more
 remarkable than the pencil
 varieties + small forms
 coll. by Brandegee and others
 in Lower Cal. If a thing is
 very small ^{in size}, there is a tendency
 to regard the variation of no
 moment regardless of its
 morphological value.

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California Trees - Primer

No reading sections except a few on subjects of very general popular interest such as age & size of trees. Age of trees, tabulate the oldest ^{anted} cases with authority.

- Big Tree grove - Miss Elliott complains of the barren grove as giving a conception of a rolling grassy area with nothing but Big Trees. One is not prepared to find other trees with them.

- Big Trees, there is no other living thing to compare with them in grandeur. Lie on your back and look up at them and you will feel something of their massiveness and symmetry, their wonderful columns and sparse foliage.

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Camp Equipment

- A good lantern can be made by cutting ^{reflector} with an axe a cross in one side of a turnip can opening the valves inward sufficiently to push through a candle which can be pushed upward as it burns down. Wire can be attached to serve as a handle.

- Tallow is one of the best greases for boots in regard to snow. Tallow is solid at ordinary temperatures and in snow it would be solid and fill the interstices. In order that it be a good job there must be three or four applications.

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Trees of California - Primer.

- The biggest tree from the standpoint of size might be considered either (1.) as the greatest combination of height & span of crown, (2.) greatest timber bulk, (3.) greatest trunk diameter near ground.

The third is generally used but is not of much importance. The first is difficult to apply, all the our Valley Oaks would illustrate a large tree by this test. The second is the truest test and according to it the Big Tree would be the biggest and justify its name.

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Trees of California - Primer

Large-sized Trees.

What is the largest tree in the world. Difficult of answer because height or circumference alone does not make a great tree. The tallest tree in the world is doubtless the Redwood. Many trees have an enormous ^{trunk} circumference and yet are not enormously large trees. The giant chestnut of Mt. Etna is one.

The Baobab is a great tree. In sheer ^{timber} bulk the Big Tree is the biggest tree. It has not the tallest nor the widest crown. The Redwoods on the main Eel will average larger than the Big Trees in Giant Forest. The biggest oak in Tulare Co. cf. vol. p. supra. Measurements of trees, how they should be made to give a just idea of the tree. The

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Trees of California, ~~Primer~~

- Yellow Pine, its highly variable bark. Broken-cone, the only broken cone in the Sierra excepts its variety ^{high} Jeffrey Pine.
- Jeffrey Pine, remarkable for its wine-colored or rusty bark.
- Silver Pine, its oak-like bark, its curved cones in clusters. Bark in any event checkered.

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Trees of California - Primer -

- Tamarac Pine - all over the granite country about Tuolumne Meadows. - 2 needles - the only pine with 2 needles in Sierra Nevada - bur-like cones. Grayish or reddish brown scaly bark.
- Hemlock - whip-like leader ^{mountain} bending over.
- Red Fir - red-brown bark, when chipped darker & richer red inside than outside. Looks as if it bled red blood. Leaves with enlarged foot-like base to leaf ^{leaves} _{falling} ^{up}.
- White Fir - whitish, grayish or drab bark lighter inside than outside when chipped. There are red lines inside but the mass of it is lighter. Leaves with a short petiole, spreading right & left mainly, on live branches.

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Shrubs of California

- *Ceanothus integrifolius*, flowers with a pleasant sweet odor. *C. cordulatus* fls. with a heavy sick-sweet sometimes almost suffocating odor.
- *Manzanitas* replace the heaths of Scotland & Europe.
- Shrub cal. form of diagnosis. Center scientific name. Put common name below it as in Tree Book where there is one. Then technical diagnosis in fine type. At end of this paragraph put explanation of specific name in parens.

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Camp Equipment

- Dux back is a water proof light canvas which makes excellent coat & trousers for rainy districts.
- Thread, heavy linen as well as cotton with several sizes of needles. Darning wool & darning needle. More important to be able to mend a garment than to have the weight of extra garments.
- In collecting a knapsack is more desirable for the shoulder than a shoulder bag, because the latter always falls when one stoops to take a plant from the ground.

Addresses

- Mr. Clifford, Mr. Laves, Mr. Lawrence,
- Mr. Porter - Boston Tech. party
- Miss Tucker, Stamford, Conn
- Miss Reynolds, Columbia Univ. (Chem.)
- Judge Norton, Stockton
- Judge
- Professor Young of Nevada State.
- Mr. & Mrs. Carpenter, U.S. Weather ^{San Diego} Bn.
- Mr. & Mrs. Naylor, San Diego.
- Mr. & Mrs. Davis, Physics Dept. ^{Harvard}
- Miss ^{many} Haskell, 314, Marlboro st. Boston
- Mr. & Mrs. Walling,
- Mrs. Tottenham. Mr. Harry Lewis ^{Walling}
- Mr. Roberts, Pasadena
- Mr. Churchill Clark, Altadena

Queries.

- Root system, Sequoia, tap-root?
- Bark of Sequoia, thick, spongy, use of? other than fire protection. Clark suggests it is spongy & takes up water for the tree. Doubtful if rain water penetrates the thick bark very far.
- Differences Jeffrey & Yellow.

"In the field of observation chance only comes to those who are well prepared" - Pasteur.

- Verbal wranglings are merely evidences of a tendency to captious quibbling and are the product of a skeptical and not a constructive mode of thinking. A real thinker is seldom a disputant.

Botanists' Amateurs on
Sierra Club Trip.

- Miss Elizabeth Palmer, L.A.
- H.M. Read, Riverside
- Laura McDermott, Holliston
- James Rennie, Napa.
- Michael,
- Miss Henrietta Elliott, Portland
- Dr. & Mrs. Frank T. Andrews,
- Miss Lydia Atterbury, ^{Chicago} Berkeley

Miss Stoddard, Hotel
Stewart, S.F.

Bucknell, Toronto. Zahara
Bookdealer "the real stuff."
Miss Haskell.

Solomon & Colby

Charles B. Bahrwell,

- If you're disappointed
don't drift, but shift.
- It's no credit to be a good
speller but it's a disgrace to
be a bad one - Dr. Johnson.

Kauzahn Addresses.

- Frank Britten, Three Rivers
- Ernest Britten, " "
- Molly Britten, " "
- Austin (Blacksmith)
- Mr. Welch (~~Kauzahn~~ ^{is - late}).
- Clarence Britten, Three Rivers
- Clarence Fry, " "
- Mr. & Mrs. McKinnon
(daughter of Walter Fry).
- Blossom, Forest Ranger
- Henry DeLong, Gaumier.